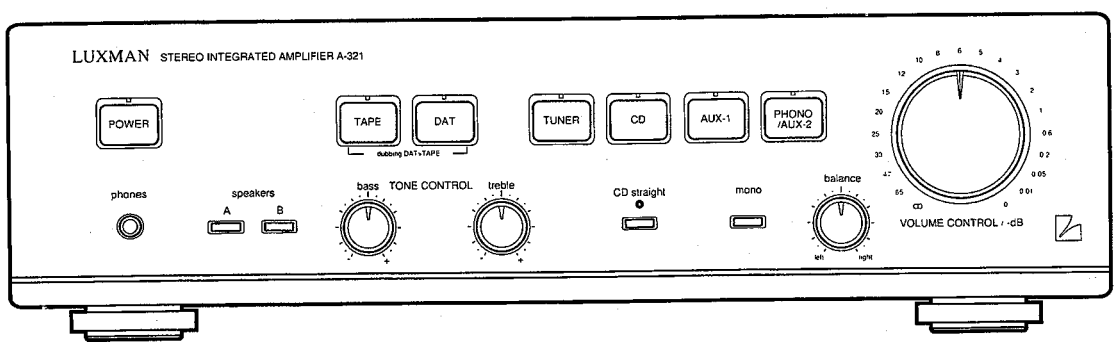
SERVICE MANUAL

Stereo Integrated Amplifier

A-311

- This model comes in 2 colors (black and champagne gold). Refer to this service manual for details.
- This model described in this manual is developed from Model A-321. For information that is not mentioned in this service manual refer to the Service Manual A-321/A-331 (68P41905W02).



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Refer to the Service Manual A-321 (68P41905W02).

Specifications

Note : Refer to the Service Manual (68P41905W02) for the description not mentioned in this manual.

Power Output (0.05% T.H.D, 8ohm, 20~20kHz) 40W

Adjustment Procedures

1. Connection

<Figure 1>

2. Control Settings

Power Switch ..... ON
Others ..... OFF

3. Adjustment Procedures

● Idling Adjustment

(1) Set VR301 (main volume) to its minimum.
(2) Adjut SVR501 (SVR502) so that the voltage between T.P.1 (T.P.3) and T.P.2 (T.P.4) is 2.2mV.

Note : Wait about 3 minutes after turning ON the power to make the above adjustment.

Electrical Parts List

Note : The parts is not mentioned, refer to the Service Manual A-321 (68P41905W02).

Symbol No.	Part No.	Description
Main P . C . Board		
Capacitors		
C517	21E10214S01	CER., 22pF
C518	21E10214S01	CER., 22pF
C519	21E10214S01	CER., 22pF
C520	21E10214S01	CER., 22pF
C525	21E10214S02	CER., 47pF
C526	21E10214S02	CER., 47pF
C535	23E04635S12	ELY., 22μF/50V
C537	23E04635S02	ELY., 6800μF/50V
C538	23E04635S02	ELY., 6800μF/50V
C539	23E04635S16	ELY., 47μF/50V
C540	23E04635S16	ELY., 47μF/50V
C541	23E04635S16	ELY., 47μF/50V
C542	23E04635S16	ELY., 47μF/50V
Resistors		
R541	06E10490S01	Cement, 0.22 ohm 3W×2
R542	06E10490S01	Cement, 0.22 ohm 3W×2

Symbol No.	Part No.	Description
Function P . C . Board		
Switch		
SW402	40E09999S01	Push SPEC 42 (DAT)
Phase Sensor P . C . Board		
Resistors		
R701	06E10213S01	M.F., 2.4Mohm 1W
R702	06E10213S01	M.F., 2.4Mohm 1W
Miscellaneous		
C616	08E04663S05	CAP., Line 0.01μF
Q517	48E10488S01	Transistor, 2SC4466
Q518	48E10488S01	Transistor, 2SC4466
Q519	48E10487S01	Transistor, 2SA1693
Q520	48E10487S01	Transistor, 2SA1693
T601	25E10498S01	Power Trans

Packing Assembly Parts List

Note : The parts is not mentioned, refer to the Service Manual A-321 (68P41905W02).

Symbol No.	Part No.	Description
○ 101	56E10491S01	Carton, Packing (Individual)
□ 101	56E10492S01	Carton, Packing (Individual)
106	68P21552W56	Owner's Manual

Symbol No.	Part No.	Description

Notes : ○ : For With Safety Regulations Version (Black Type) [AD]
□ : For With Safety Regulations Version (Champagne Gold Type) [AD]
Others : Common.

Cabinet Assembly Parts List

Note : The parts is not mentioned, refer to the Service Manual A-321 (68P41905W02).

Symbol No.	Index	Part No.	Description
○ 3	5-B	36E09303S02	Knob (VOLUME CONTROL)
□ 3	5-B	36E09303S03	Knob (VOLUME CONTROL)
24	2-H	64E10493S01	Back Panel
49	3-C	26E10023S01	Shield Sheet

Symbol No.	Index	Part No.	Description
52	2-E	41E10163S01	Leaf Spring
64	4-A	03E10496S01	Screw, Tap Tite (M3×6)
65		03E04701S10	Screw, Tap Tite (M2.6×6)

Notes : ○ : For With Safety Regulations Version (Black Type) [AD]
□ : For With Safety Regulations Version (Champagne Gold Type) [AD]
Others : Common.

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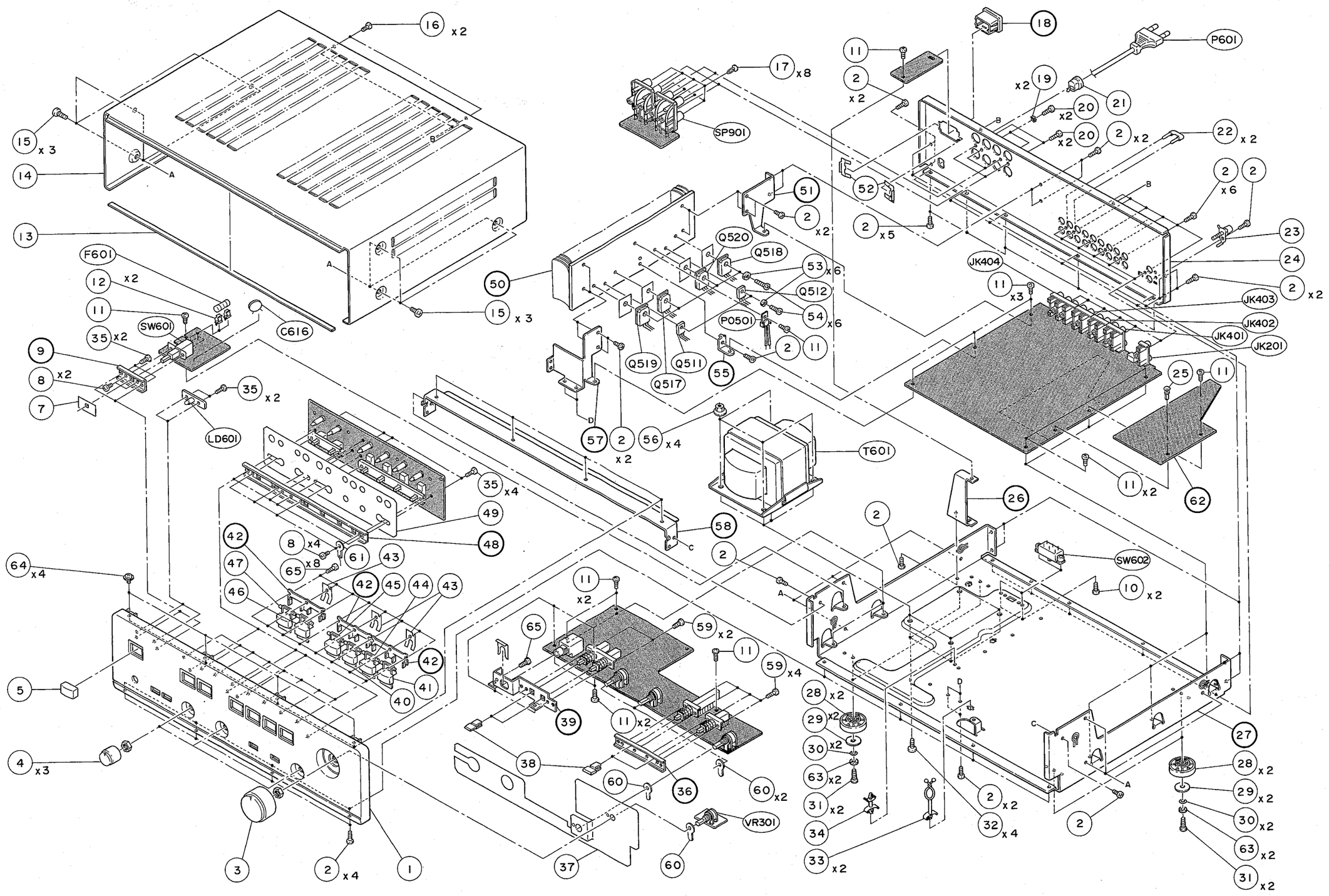
Exploded View (Cabinet)



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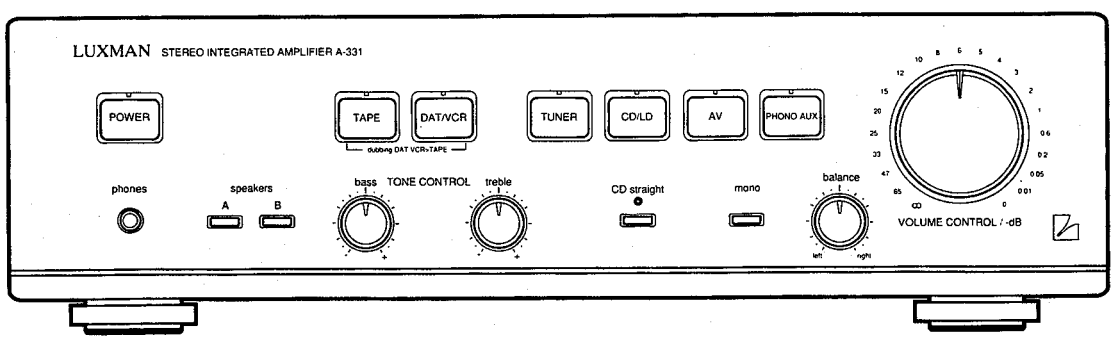
SERVICE MANUAL

Stereo Integrated Amplifier

A-321/A-331



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Specifications

Power Output (0.08% T.H.D, 8 ohm, 20~20kHz)	50W (☆)
	60W (★)
Input Sensitivity (Ref. 1kHz, 50W / 8 ohm)	Line : 150 ± 30mV
	Phone : 2.5 ± 0.5mV
Input Impedance (1kHz)	Line : 35k ohm
	Phone : 47k ohm
Frequency Response (Ref. 1kHz)	Line (10~65kHz) : - 3dB
	Phono / AUX-2 (10~40kHz) : - 3dB (☆)
	Phono / AUX (10~40kHz) : - 3dB (★)
Total Harmonic Distortion (20~20kHz, 8 ohm)	0.08%
S / N Ratio (Input 500mV, 1kHz)	86dB
Tone Controls	Bass (100Hz) : ± 10 ± 2dB
	Treble (10kHz) : ± 10 ± 2dB
Cross Talk (Ref. 1kHz)	58dB
Residual Noise	1mV
Separation (1kHz, Input Shorted)	60dB
Power Supply	AC120 / 220 / 240V, 50Hz
Semiconductors	8 IC's, 24 Transistors, 20 Diodes (☆)
	10 IC's, 24 Transistors, 24 Diodes (★)
Dimensions (W × H × D)	438 × 125 × 363 mm
Weight	7.6kg (☆)
	8.2kg (★)

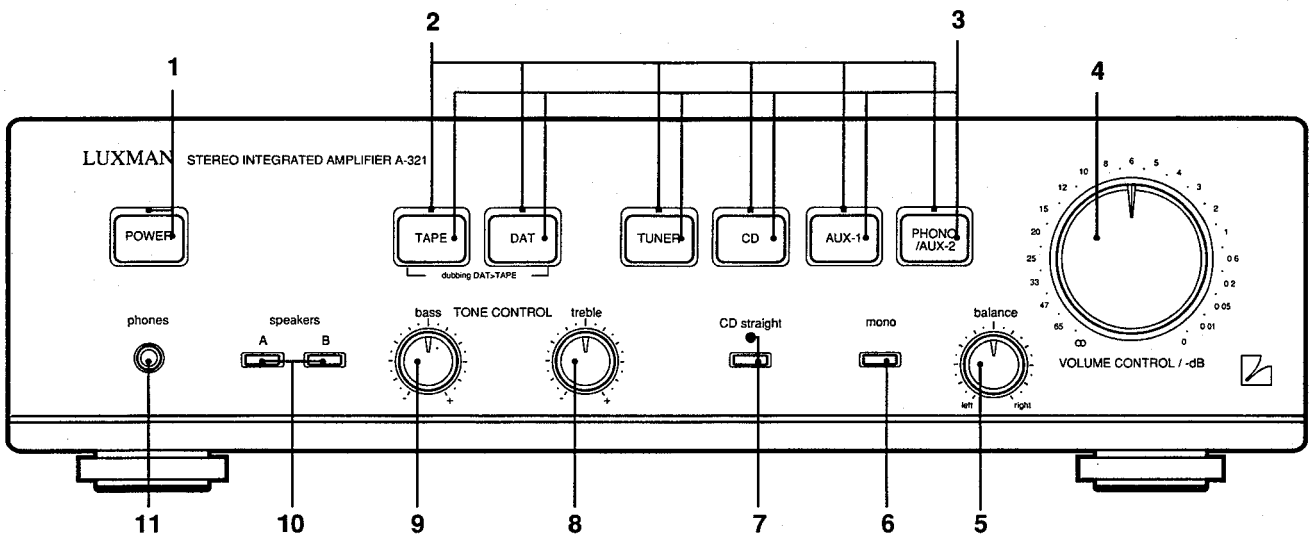
NOTE : Due to continuing product improvement, specifications and designs are subject to change without notice.

☆ : For A-321 Model only, ★ : For A-331 Model only, Others : Common.

<A-321 Model>

Names and Functions of Parts

Front Panel



1. 'POWER" button and indicator

Pressing this button turns the unit on and off. First, the Operation indicator lights up when this button is depressed, and then the time delay muting circuit is turned on, putting the amplifier into perfect operational condition in about 5 seconds.

2. Input Select indicators

The LED indicator for the selected input source will light up to tell which source is selected with the Input Select buttons (item #3).

3. Input Select buttons

Press one of these buttons to select any one of six sources; TAPE, DAT, TUNER, CD, AUX-1, PHONO/AUX-2.

4. "VOLUME CONTROL"

Allows precision, low noise adjustment of volume level. It is recommended that the volume control be set to a low position prior to power turn on and when switching between sources.

5. "balance" control

Adjusts for unequal volume level between channels. Normally, with today's high quality sources, it is seldom necessary to move this control from its precision centre detent position.

6. "mono" button

Place in the mono (in) position for mono sources, for balance control adjustment, for lower noise operation from high noise stereo source, or for checking speaker phasing. Otherwise, leave it in the stereo (out) position.

7. "CD straight" button and indicator

For optimum sound quality in CD operation, press this button to bypass control and switching functions.

Note:
Be sure "CD straight" button is in the OFF (out) position when using sources other than CD.

8. "treble" control

This control will increase or decrease high frequency content in the program material. At the centre detent position, a flat frequency response results.

9. "bass" control

This control will increase or decrease low frequency content in the program material. At the centre detent position, a flat frequency response results.

10. "speakers A and B" buttons

Two sets of stereo speaker systems may be used with the A-321/A-311; A and B buttons corresponding with "SPEAKERS A and B" terminals (item #12) on the rear panel. You may choose independent or simultaneous operation of the two systems by using these buttons.

Note:
The impedance of each speaker system should equal or exceed 8 ohms when driving two sets at the same time.

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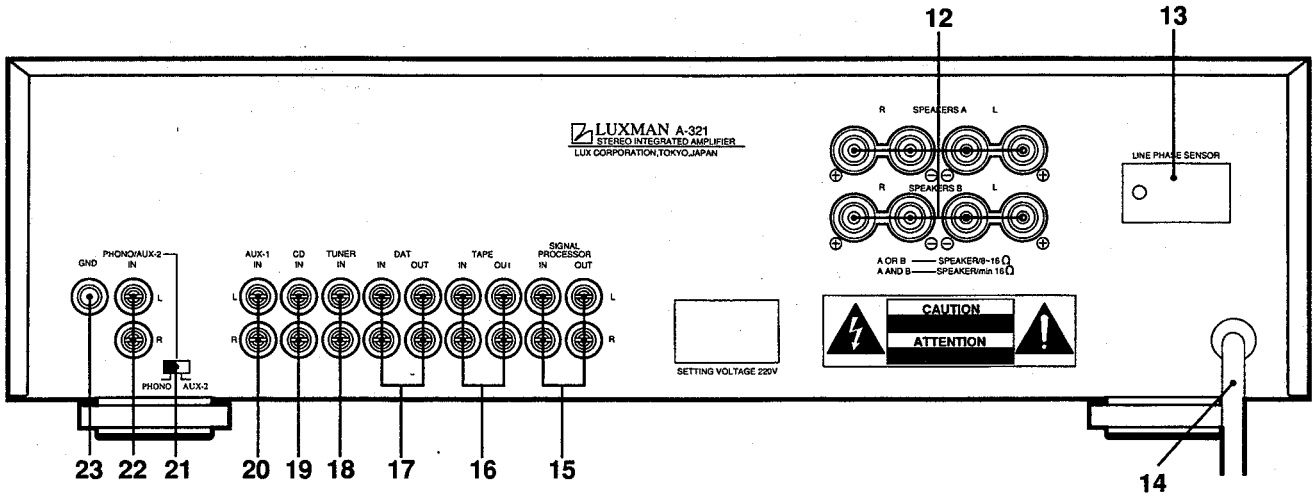
11. "phones" jack

Connection of stereophonic headphones to this jack allows private listening. There is signal at the jack at all times. Placing the "speakers A and B" buttons (item #10) in the OUT position, will allow private listening.

Rear Panel



12. "SPEAKERS A and B" terminals

You may connect 2 pairs of stereo speaker systems to these terminals, one pair to the upper "A" terminals and a 2nd pair to the lower "B" terminals.

The speaker systems may be switched on and off by the front panel "speakers A and B" buttons (item #10).

13. "LINE PHASE SENSOR" indicator

When plugging the AC power cord into the wall outlet, check the polarity of the AC power cord at this sensor and indicator. When the sensor is touched after connecting the AC power cord, the polarity is correct if the indicator remains unlit. If the indicator lights up, unplug the AC power cord then plug its other side into the AC wall outlet.

Note:
Check the polarity before any other sources. If you live in a flat building where the power supply is floating, the indicator may not change status.

---

14. AC Power Cord

Insert the AC plug of the A-321/A-311 into an appropriate wall outlet.

15. "SIGNAL PROCESSOR IN and OUT" jacks

For connection of a surround sound processor, an equalizer or other signal processor as desired.

Note:
Jumper bars are factory installed in these jacks. They need to be removed only when connecting a processor. Retain for possible future reuse.

---

16. "TAPE IN and OUT" jacks

Connect the LINE IN and LINE OUT jacks of your audio tape deck to these OUT and IN jacks respectively.

17. "DAT IN and OUT" jacks

Connect the LINE IN and LINE OUT jacks of your DAT deck to these OUT and IN jacks respectively.

18. "TUNER IN" jacks

This set of jacks is for connection of a tuner. They may also be used for any other high level signal source as well.

19. "CD IN" jacks

This set of jacks is for connection of a CD (compact disc) player. They may also be used for any other high level signal source as well.

20. "AUX-1 IN" jacks

Connect the audio output of a VCR, Video Disc Player, CD Player, Cassette Deck, etc. to the "AUX-1 IN" jacks of the A-321/A-311.

21. "PHONO/AUX-2" switch

If a phono turntable is not required in the system, this switch allows the phono jacks (item #22) to be used as an additional set of high level inputs. Move it to the "AUX-2" position for connection of an additional CD player, Tape deck, etc.

CAUTION: Be sure the volume control is set to minimum when setting this switch.

22. "PHONO/AUX-2 IN" jacks

A moving magnet (MM) type phono cartridge may be connected to these inputs. Also, they may be used as an additional set of high level inputs (see item #21).

CAUTION: When these jacks are used for high level inputs, ensure that the "PHONO/AUX-2" switch (item #21) is set to "AUX-2" to prevent possible damage to the amplifier and speakers.

23. "GND" terminal

Connect the common (ground) lead of your phono turntable to this terminal.

Operation Guidelines

The following guidelines assume that all connections have been made according to the "Reference Illustrations," page 4.

Power and Source Switching

To prevent the possibility of excessive, sudden sound levels, it is recommended that the volume control be placed at a low level position each time the power button is turned on or when switching between sources by the INPUT SELECTOR.

To Play Source Units

1. Turn the power on to all the components in use.
2. Choose your desired source with the Input Selector buttons (item #3).
3. Operate the source unit.

Tape Recording Operation

Tape Recording

1. Select the desired source to be recorded with the Input Selector buttons (item #3) and place the source unit into the play mode.
2. Operate the tape deck for recording.
3. If you have a 3 head deck or a DAT with monitoring function, you can monitor the actual recording by depressing the corresponding "TAPE" or "DAT" buttons (item #3) on the A321/A311.

Tape Dubbing

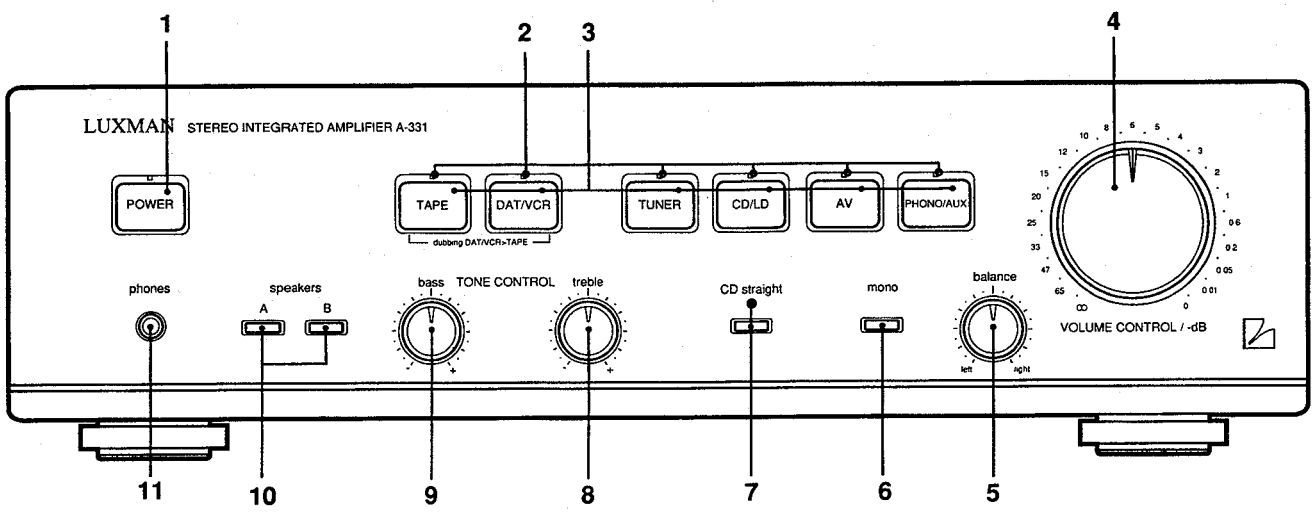
Tape dubbings from the DAT deck to the audio tape deck may be performed through the A-321/A-311.

1. Press both "DAT" and "TAPE" buttons (item #3) of the Input selector on the A-321/A-311.
2. Load a prerecorded tape into the DAT deck and a blank tape into the audio tape deck.
3. Place the DAT deck in the play mode and the audio tape deck in the recording mode. When audio tape decks are connected to the "DAT IN and OUT" jacks (item #17) on the A-321/A-311, dubbing operation can be performed from the audio tape deck connected to the DAT IN jacks to the audio tape deck connected to the DAT OUT jacks.

<A-331 Model>

Names and Functions of Parts

Front Panel



1. **"POWER" button and indicator**

   Pressing this button turns the unit on and off. First, the Operation indicator lights up when this button is depressed, and then the time delay muting circuit is turned on, putting the amplifier into perfect operational condition in about 5 seconds.

2. **Input Select indicators**

   The LED indicator for the selected input source will light up to tell which source is selected with the Input Select buttons (item #3).

3. **Input Select buttons**

   Press one of these buttons to select any one of six sources; TAPE, DAT/VCR, TUNER, CD/LD, AV, PHONO/AUX.

4. **"VOLUME CONTROL"**

   Allows precision, low noise adjustment of volume level. It is recommended that the volume control be set to a low position prior to power turn on and when switching between sources.

5. **"balance" control**

   Adjusts for unequal volume level between channels. Normally, with today's high quality sources, it is seldom necessary to move this control from its precision centre detent position.

6. **"mono" button**

   Place in the mono (in) position for mono sources, for balance control adjustment, for lower noise operation from high noise stereo source, or for checking speaker phasing. Otherwise, leave it in the stereo (out) position.

7. **"CD straight" button and indicator**

   For optimum sound quality in CD operation, press this button to bypass control and switching functions.

Note:
Be sure "CD straight" button is in the OFF (out) position when using sources other than CD.

---

8. **"treble" control**

   This control will increase or decrease high frequency content in the program material. At the centre detent position, a flat frequency response results.

9. "bass" control

This control will increase or decrease low frequency content in the program material. At the centre detent position, a flat frequency response results.

10. "speakers A and B" buttons

Two sets of stereo speaker systems may be used with the A-331; A and B buttons corresponding with "SPEAKERS A and B" terminals (item #17) on the rear panel. You may choose independent or simultaneous operation of the two systems by using these buttons.

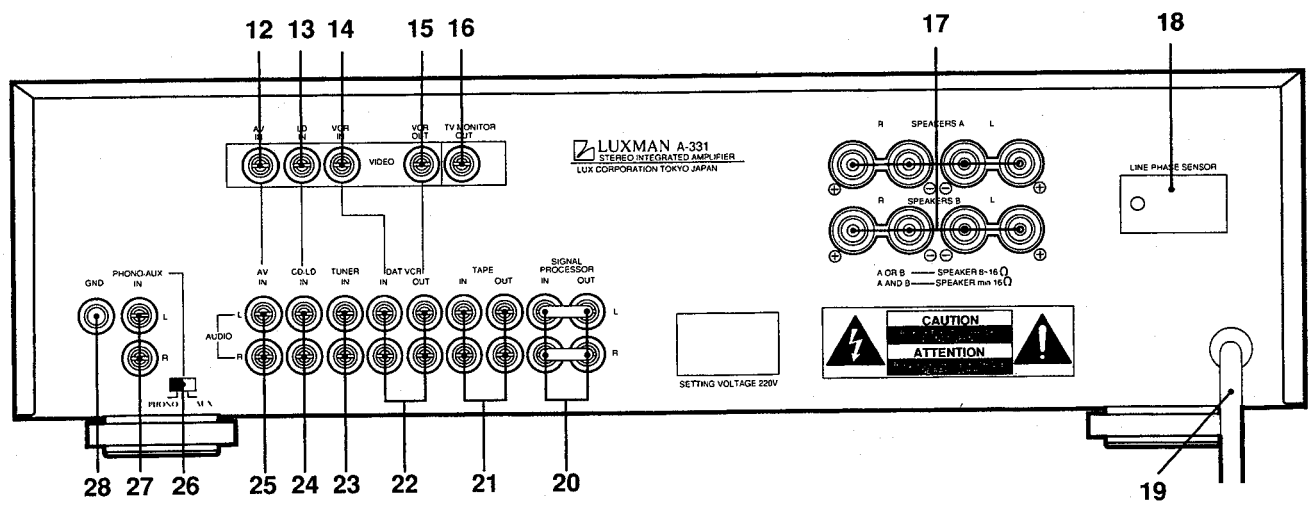
Note:
The impedance of each speaker system should equal or exceed 8 ohms when driving two sets at the same time.

---

11. "phones" jack

Connection of stereophonic headphones to this jack allows private listening. There is signal at the jack at all times. Placing the "speakers A and B" buttons (item #10) in the OUT position, will allow private listening.

Rear Panel



12. "VIDEO AV IN" jack

Connect the video output of a VCR, Laser Disc Player, etc. to the "VIDEO AV IN" jack of the A-331.

13. "VIDEO LD IN" jack

Connect the video output of a Laser Disc Player to the "VIDEO LD IN" jack of the A-331.

14. "VIDEO VCR IN" jack

Connect the video output of a VCR to the "VIDEO VCR IN" jack of the A-331.

15. "VIDEO VCR OUT" jack

Connect the video input of a VCR to the "VIDEO VCR OUT" jack of the A-331.

16. "VIDEO TV MONITOR OUT" jack

Connect the video input of a TV to the "VIDEO TV MONITOR OUT" jack of the A-331.

17. "SPEAKERS A and B" terminals

You may connect 2 pairs of stereo speaker systems to these terminals, one pair to the upper "A" terminals and a 2nd pair to the lower "B" terminals.

The speaker systems may be switched on and off by the front panel "speakers A and B" buttons (item #10).

18. "LINE PHASE SENSOR" indicator

When plugging the AC power cord into the wall outlet, check the polarity of the AC power cord at this sensor and indicator. When the sensor is touched after connecting the AC power cord, the polarity is correct if the indicator remains unlit. If the indicator lights up, unplug the AC power cord then plug its other side into the AC wall outlet.

Note:
Check the polarity before any other sources. If you live in a flat building where the power supply is floating, the indicator may not change status.

---

19. AC Power Cord

Insert the AC plug of the A-331 into an appropriate wall outlet.

20. "SIGNAL PROCESSOR IN and OUT" jacks

For connection of a surround sound processor, an equalizer or other signal processor as desired.

Note:
Jumper bars are factory installed in these jacks. They need to be removed only when connecting a processor. Retain for possible future reuse.

---

21. "TAPE IN and OUT" jacks

Connect the LINE IN and LINE OUT jacks of your audio tape deck to these OUT and IN jacks respectively.

22. "DAT/VCR IN and OUT" jacks

Connect the LINE IN and LINE OUT jacks of your DAT or VCR to these OUT and IN jacks respectively.

23. "TUNER IN" jacks

This set of jacks is for connection of a tuner. They may also be used for any other high level signal source as well.

24. "CD/LD IN" jacks

This set of jacks is for connection of a CD (compact disc) player or LD (laser disc) player. They may also be used for any other high level signal source as well.

25. "AV IN" jacks

Connect the audio output of a VCR, Laser Disc Player, etc. that is connected to the "VIDEO AV IN" jacks (item #12) of the A-331.

26. "PHONO/AUX" switch

If a phono turntable is not required in the system, this switch allows the phono jacks (item #27) to be used as an additional set of high level inputs. Move it to the "AUX" position for connection of an additional CD player, Tape deck, etc.

CAUTION: Be sure the volume control is set to minimum when setting this switch.

27. "PHONO/AUX IN" jacks

A moving magnet (MM) type phono cartridge may be connected to these inputs. Also, they may be used as an additional set of high level inputs (see item #26).

CAUTION: When these jacks are used for high level inputs, ensure that the "PHONO/AUX" switch (item #26) is set to "AUX" to prevent possible damage to the amplifier and speakers.

28. "GND" terminal

Connect the common (ground) lead of your phono turntable to this terminal.

Operation Guidelines

The following guidelines assume that all connections have been made according to the "Reference Illustrations," page 4.

Power and Source Switching

To prevent the possibility of excessive, sudden sound levels, it is recommended that the volume control be placed at a low level position each time the power button is turned on or when switching between sources by the INPUT SELECTOR.

To Play Source Units

1. Turn the power on to all the components in use.
2. Choose your desired source with the Input Selector buttons (item #3).
3. Operate the source unit.

Tape Recording Operation

Tape Recording

1. Select the desired source to be recorded with the Input Selector buttons (item #3) and place the source unit into the play mode.
2. Operate the tape deck for recording.
3. If you have a 3 head deck or a DAT with monitoring function, you can monitor the actual recording by depressing the corresponding "TAPE" or "DAT/VCR" buttons (item #3) on the A-331.

Tape Dubbing

Tape dubbings from the DAT/VCR deck to the audio tape deck may be performed through the A-331.

1. Press both "DAT/VCR" and "TAPE" buttons (item #3) of the Input selector on the A-331.
2. Load a prerecorded tape into the DAT deck and a blank tape into the audio tape deck.
3. Place the DAT deck in the play mode and the audio tape deck in the recording mode. When audio tape decks are connected to the "DAT/VCR IN and OUT" jacks (item #22) on the A-331, dubbing operation can be performed from the audio tape deck connected to the DAT/VCR IN jacks to the audio tape deck connected to the DAT/VCR OUT jacks.

Disassembly Instructions

1. Removal of Front Panel

(1) After removal of Top Cover, remove Volume Control Knob, Balance Volume Knob, Treble and Bass Volume Knobs and then remove Nut for that the Volume Knobs as shown in Figure 1.
(2) Remove fourteen screws marked "○" as shwon in Figures 2 and 3.
(3) Front Panel with Function P.C.Board and LED P.C.Board can be removed completly.

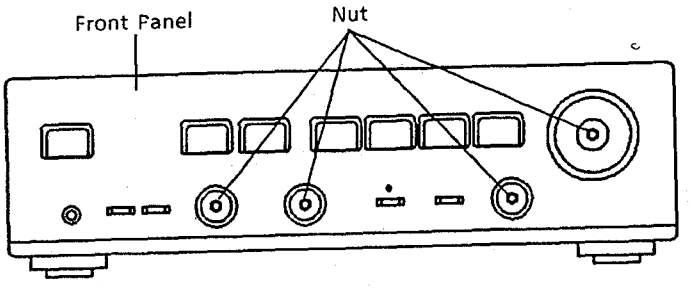


Figure 1

2. Removal of Function P.C.Board, LED P.C.Board

(1) Remove six screws marked "△" and "▲" as shown in Figure 3.
(2) Disconnect all wires from the Main P.C.Board, Sub P.C.Board and Main VR P.C.Board.

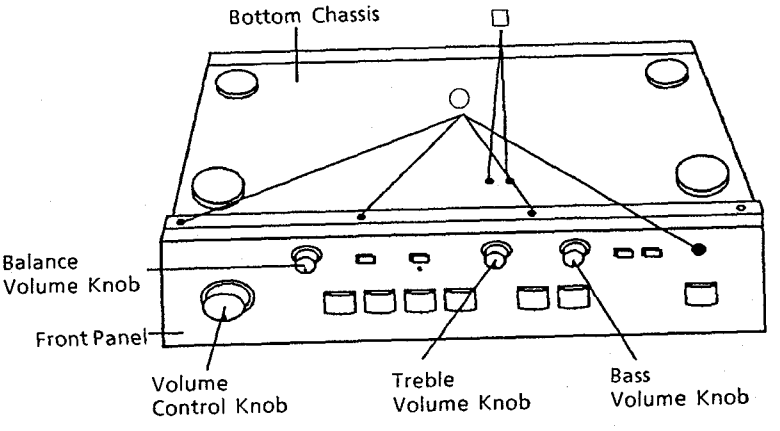


Figure 2

3. Removal of Power SW P.C.Baord

(1) Remove one screw marked "▽" as shown in Figure 3.
(2) Disconnect all wires from the Power SW P.C.Board.

4. Removal of Sub P.C.Board

(1) After removal of Front Panel, remvoe one Supprt P.C.Board marked "■" from Sub P.C.Board as shown in Figure 4, by pushing the point "A" as shown in Figure 5.
(2) Remove three screws marked "●" as shown in Figure 4.
(3) Disconnect all wires from the Sub P.C.Board.

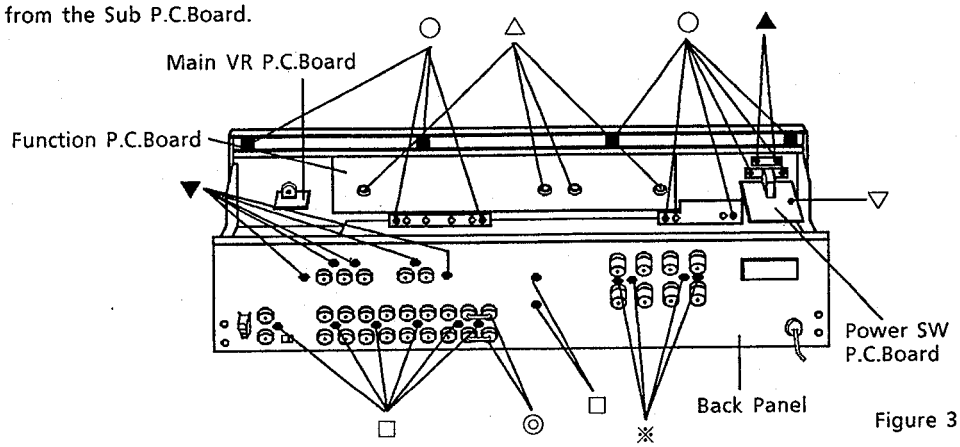


Figure 3

5. Removal of SP Terminal P.C.Board

(1) Remove four screws marked "※" as shown in Figure 3.
(2) Disconnect all wires from the SP Terminal P.C.Board.

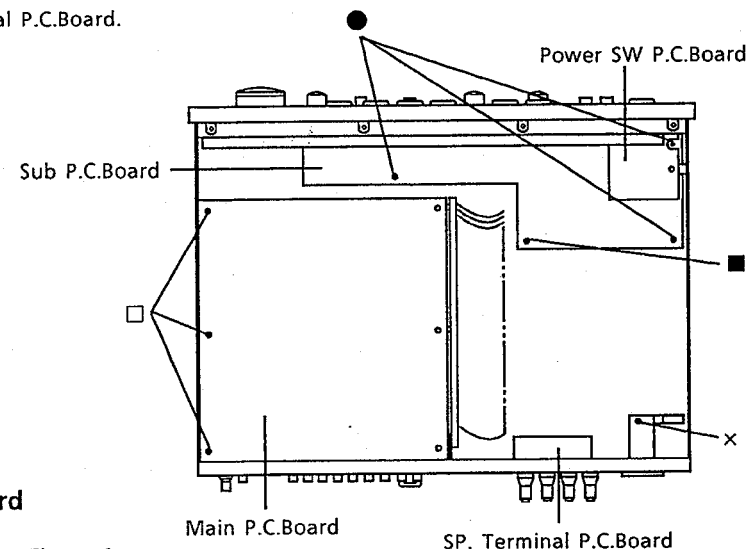


Figure 4

6. Removal of Phase Sensor P.C.Board

(1) Remove one screw marked "×" as shown Fiugre 4.
(2) Push rib in the Holder (B) and pull out as shown in Figure 6.
(3) Disconnect all wires from the Phase Sensor P.C.Board.

7. Removal of Main P.C.Board

(1) Remove two Jumper pins marked "◎" as shown in Figure 3.
(2) Remove thirteen screws marked "□" as shown in Figures 2, 3 and 4.
(3) Disconnect all wires from the Main P.C.Board.

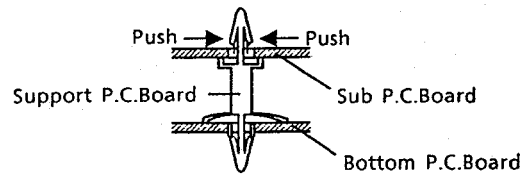


Figure 5

8. Removal of Video P.C.Board (A-331 Model only)

(1) Remove five screws marked "▼" as shown in Figure 3.
(2) Disconnect all wires from the Video P.C.Board.

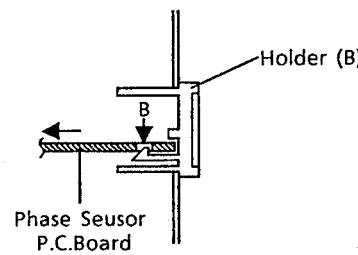
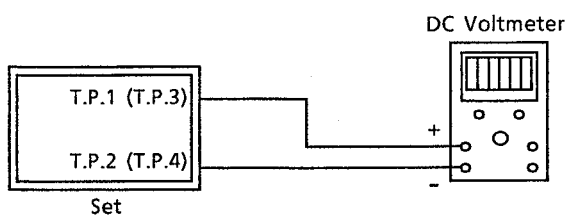


Figure 6

Adjustment Procedures

1. Connection



<Figure 7>

2. Control Settings

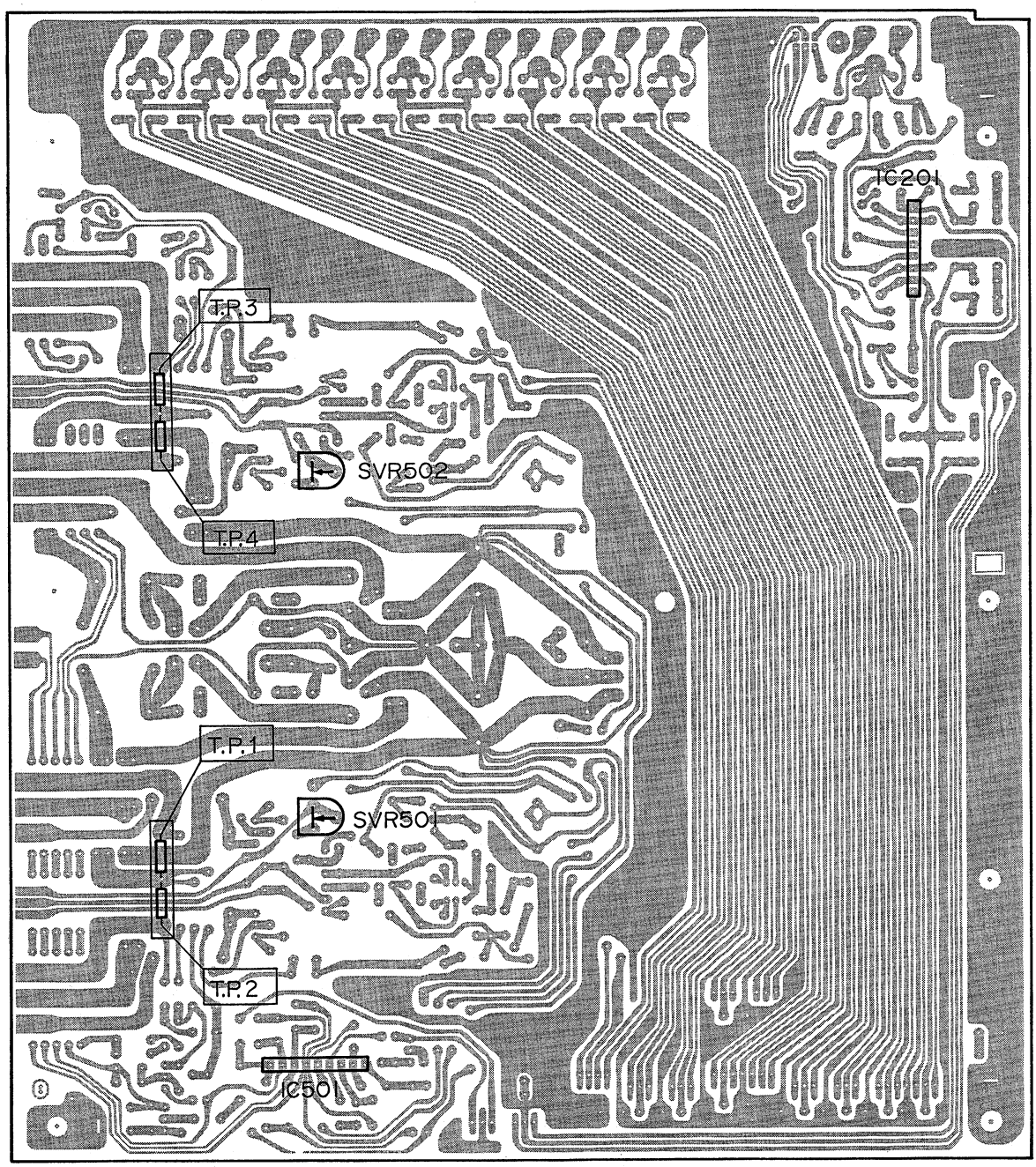
Power Switch ..... ON
Others ..... OFF

3. Adjustment Procedures

● Idlin Adjustment
(1) Set VR301 (main volume) to its minimum.
(2) Adjut SVR501 (SVR502) so that the voltage between T.P.1 (T.P.3) and T.P.2 (T.P.4) is 3.3mV.

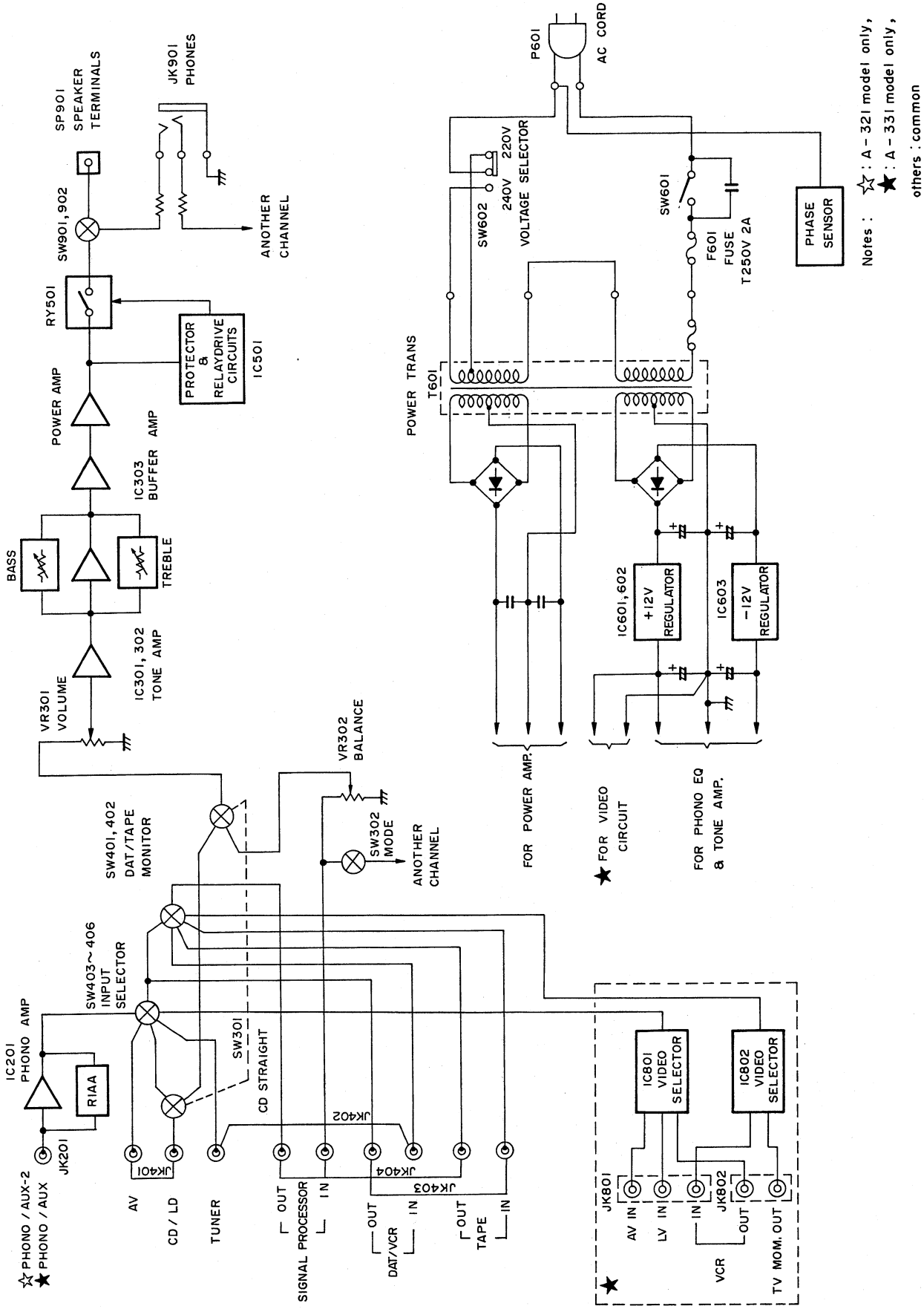
Note : Wait about 3 minutes after turning ON the power to make the above adjustment.

Adjustment Locations



MAIN P.C.Board (Top View)

Block Diagram



Parts Layout on P.C. Boards and Wiring Diagram

ALL P.C. Boards viewed from foil side.

MAIN P. C. BOARD

VIDEO P. C. BOARD (★)

SHIELD

SUB P. C. BOAR

Blue Pattern : Foil Side Pattern.

SP TERMINAL P. C. BOARD

Note: ☆ : A-321 Model only,
★ : A-331 Model only,
others : common

T601
POWER TRANS

SW602
SWITCH, VOLTAGE

P601
PLUG AC CORD

SUB P. C. BOARD

FUNCTION P. C. BOARD

MAIN VR P. C. BOARD

LED P. C. BOARD

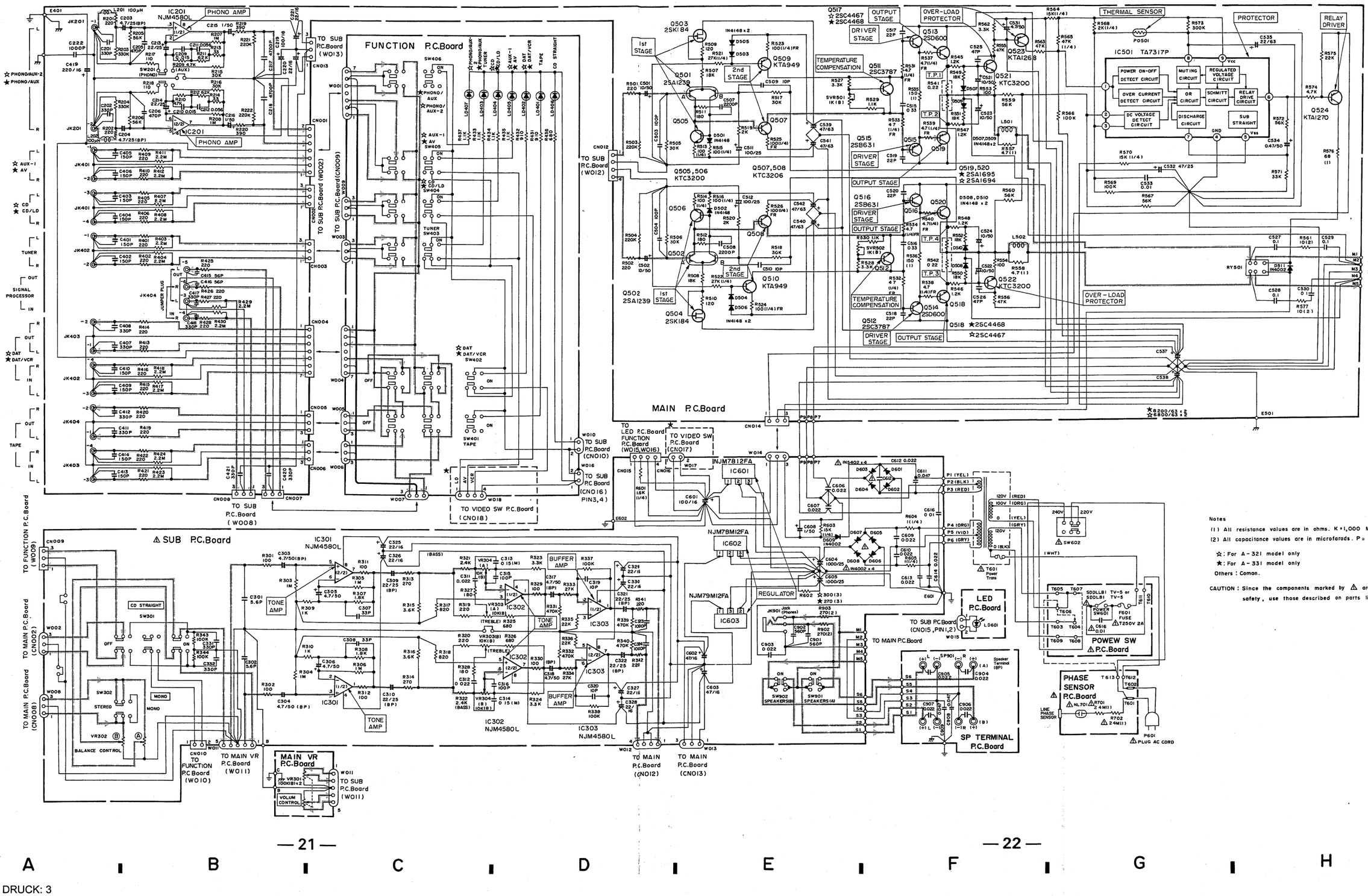
POWER SW P. C. BOARD

PHASE SENSOR P. C. BOARD

TO PHASE SENSOR TOUCH PLATE

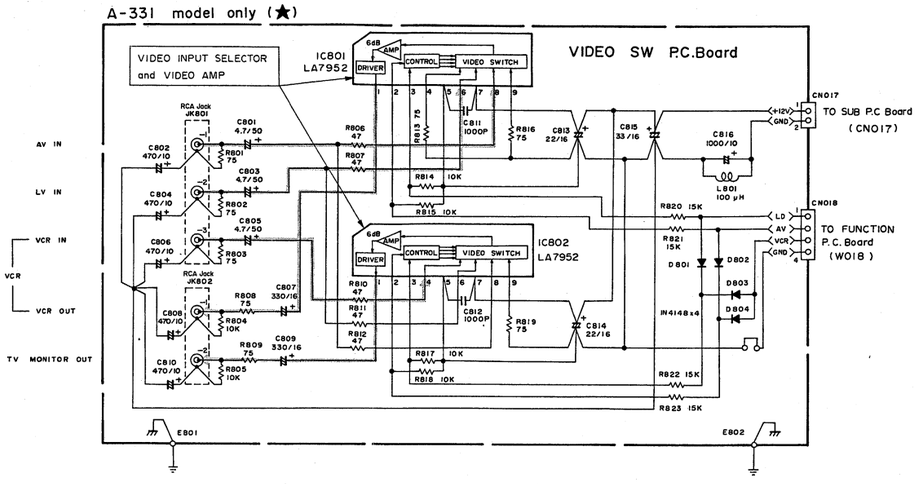
Schematic Diagram

IC'S	IC201	IC301	IC302	IC303	IC602 IC601 IC603	IC501
TRANSISTORS (Q)				Q501 Q503 Q505 Q506 Q502 Q504 Q509 Q507 Q508 Q510	Q511 Q513 Q517 Q515 Q519 Q516 Q520 Q512 Q514 Q518 Q521 Q522 Q523	Q524



IC' S	IC801 IC802

A-331 model only (★)



NOTE

1. All resistance values are in ohms. K = 1,000 M = 1,000,000
2. All capacitance values are in microfarads P = $\frac{1}{1,000,000}$

	IC201	IC301	IC302	IC303
1	-0.14V	0V	1.2V	-0.009V
2	0.01V	0.15V	2.2V	0.006V
3	0.01V	0.15V	2.2V	0.006V
4	-11.9V	-11.8V	-11.8V	-11.8V
5	0.01V	0.15V	2.2V	0.006V
6	0.01V	0.15V	2.1V	0.006V
7	-0.14V	0V	1.1V	0.009V
8	12.1V	12.1V	12V	12.1V

	IC501
1	0.68V
2	0V
3	0.03V
4	0V
5	0.78V
6	0.78V
7	0V
8	1.27V
9	2.92V

	IC602	IC603
1	12.1V	-11.8V
2	—	—
3	19.4V	-20V

	E	C	B
Q511	1.2V	1.2V	0.5V
Q512	1.2V	1.2V	0.5V

<Measuring Conditions>

1. Power supply voltage : AC220V, 50Hz
2. Measuring meter : Digital Multimeter
3. Measuring point refernce : Between ground
4. Measuring conditions : No Signal Input
   Power Output "OFF"

A-321 model only

	IC601
1	12.02V
2	—
3	19.4V

FET	S	D	G
Q503	36.3V	46.4V	33.9V
Q504	33.4V	46.4V	35.9V

	E	C	B
Q501-A	0.6V	-45.3V	0.043V
Q501-B	0.6V	-45.8V	0.045V
Q502-A	0.6V	-45.3V	0.04V
Q502-B	0.6V	-45.8V	0.038V
Q505	-46.3V	-45.3V	-45.8V
Q506	-46.4V	-45.3V	-45.8V
Q507	-45.7V	-1.2V	-45.3V
Q508	-45.8V	-1.2V	-45.3V
Q509	45.8V	1.2V	45.3V
Q510	45.8V	1.2V	45.3V
Q513	0.6V	46.5V	1.2V

	E	C	B
Q514	0.6V	46.5V	1.2V
Q515	-0.6V	-46.5V	-1.2V
Q516	-0.6V	-46.5V	-1.2V
Q517	0.007V	46.4V	0.6V
Q518	0.009V	46.4V	0.6V
Q519	-0.008V	-46.4V	-0.6V
Q520	-0.06V	-46.4V	-0.6V
Q521	0.003V	46.2V	0.006V
Q522	0.006V	46.2V	0.009V
Q523	46.4V	-0.7V	46.4V
Q524	12V	11.9V	11.9V

A-331 model only

	IC801	IC802
1	3.6V	3.5V
2	0.06V	0.05V
3	0.05V	0.05V
4	0.78V	3.1V
5	0.03V	0.02V
6	3.1V	3.1V
7	11.96V	11.96V
8	3.1V	3.1V
9	0.78V	0.78V

	IC601
1	12.04V
2	—
3	19.4V

	E	C	B
Q501-A	0.6V	-48.5V	0.034V
Q501-B	0.6V	-49V	0.032V
Q502-A	0.6V	-48.5V	0.031V
Q502-B	0.6V	-49V	0.034V
Q505	-49.6V	-48.5V	-49V
Q506	-49.6V	-48.5V	-49V
Q507	-48.9V	-1.2V	-48.5V
Q508	-49V	-1.2V	-48.5V
Q509	49V	1.2V	48.5V
Q510	49V	1.2V	48.5V
Q513	0.6V	49.6V	1.1V

	E	C	B
Q514	0.6V	49.6V	1.1V
Q515	-0.6V	-49.6V	-1.1V
Q516	-0.6V	-49.6V	-1.1V
Q517	0.003V	49.6V	0.6V
Q518	0.007V	49.6V	0.6V
Q519	-0.006V	-49.6V	-0.6V
Q520	-0.06V	-49.6V	-0.6V
Q521	-0.002V	49.4V	0.002V
Q522	0.003V	49.4V	0.003V
Q523	46.6V	-0.6V	49.6V
Q524	12V	11.9V	11.3V

FET	S	D	G
Q503	32.6V	49.6V	33.7V
Q504	31.4V	49.6V	31.8V

Electrical Parts List

Resistor : Carbon resistors under 1/4 watts are not mentioned in the parts list, please confirm them by schematic diagram.

Capacitor : μF = microfarads, pF = picofarads

Abbreviations

RES. =	Resistor	CAP. =	Capacitor
C.F. =	Carbon Film	ELY. =	Electrolytic
M.F. =	Metal Film	CER. =	Ceramic
M.O. =	Metal Oxide Film	MYL. =	Mylar
M.P. =	Metal Plate	TAN. =	Tantalum
TR. =	Transistor	POLY. =	Polystyrol
TRANS. =	Transformer	PP. =	Polypropylene
CP. =	Chip	PLT. =	Polyethylene
		PF. =	Polyester Film

Symbol No.	Part No.	Description
		Main P. C. Board
		IC's
IC201	51E09990S01	NJM4580L
IC501	51T67437F01	TA7317P
		Transistors
Q501	48E09215S01	2SA1239
Q502	48E09215S01	2SA1239
Q503	48T66542F01	2SK184
Q504	48T66542F01	2SK184
Q505	48E09223S01	KTC3200
Q506	48E09223S01	KTC3200
Q507	48E09220S01	KTC3206
Q508	48E09220S01	KTC3206
Q509	48E09219S01	KTA949
Q510	48E09219S01	KTA949
Q513	48E08018S01	2SD600
Q514	48E08018S01	2SD600
Q515	48E08019S01	2SB631
Q516	48E08019S01	2SB631
Q521	48E09223S01	KTC3200
Q522	48E09223S01	KTC3200
Q523	48E09216S01	KTA1268
Q524	48E10007S01	KTA1270
		Diodes
D501	48E04616S01	1N4148
D502	48E04616S01	1N4148
D503	48E04616S01	1N4148
D504	48E04616S01	1N4148
D505	48E04616S01	1N4148
D506	48E04616S01	1N4148
D507	48E04616S01	1N4148
D508	48E04616S01	1N4148
D509	48E04616S01	1N4148
D510	48E04616S01	1N4148
D511	48S40477U02	1N4002
or	48E09802S01	1N4002A
		Coils
L201	24E09998S01	100μH
L202	24E09998S01	100μH
L501	24E09245S01	1μH
L502	24E09245S01	1μH
		Relay
☆ RY501	80E10012S01	OSA-SS-212DM3
☆ or	80E04619S01	OMI-SS-212LM
☆ or	80E10013S01	HR-CR323
★ RY501	80E10025S01	OSA-SS-212DM5
★ or	80E04619S01	OMI-SS-212LM
★ or	80E10013S01	HR-CR323
		Switch
SW201	40E09313S01	Slide SSSF12 (PHONO/AUX)
		Capacitors
C201	21E09996S02	CER., 330pF
C202	21E09996S02	CER., 330pF
C203	23E09994S01	ELY., (B.P) 4.7μF/25V
C204	23E09994S01	ELY., (B.P) 4.7μF/25V
C205	21E09996S01	CER., 470pF
C206	21E09996S01	CER., 470pF
C209	08E04735S06	MYL., 0.015μF
C210	08E04735S06	MYL., 0.015μF
C211	08E04735S19	MYL., 0.056μF
C212	08E04735S19	MYL., 0.056μF

Notes : ☆ : For A-321 Model Only, ★ : For A-331 Model Only, Others : Common.

Symbol No.	Part No.	Description
C213	23E04636S02	ELY., 22μF/25V
C214	23E04636S02	ELY., 22μF/25V
C215	23E04635S03	ELY., 1μF/50V
C216	23E04635S03	ELY., 1μF/50V
C217	21E04631S10	CER., 4700pF
C218	21E04631S10	CER., 4700pF
C219	23E04754S03	ELY., 100μF/16V
C220	23E04754S04	ELY., 22μF/16V
C221	23E04754S04	ELY., 22μF/16V
C222	21E04631S11	CER., 1000pF
C401	21E09996S06	CER., 150pF
C402	21E09996S06	CER., 150pF
C403	21E09996S06	CER., 150pF
C404	21E09996S06	CER., 150pF
C405	21E09996S06	CER., 150pF
C406	21E09996S06	CER., 150pF
C407	21E09996S02	CER., 330pF
C408	21E09996S02	CER., 330pF
C409	21E09996S06	CER., 150pF
C410	21E09996S06	CER., 150pF
C411	21E09996S02	CER., 330pF
C412	21E09996S02	CER., 330pF
C413	21E09996S06	CER., 150pF
C414	21E09996S06	CER., 150pF
C415	21E04622S29	CER., 56pF
C416	21E04622S29	CER., 56pF
C417	21E09996S02	CER., 330pF
C418	21E09996S02	CER., 330pF
C419	23E04754S02	ELY., 220μF/16V
C420	21E09996S02	CER., 330pF
C421	21E09996S02	CER., 330pF
C501	23E04635S10	ELY., 10μF/50V
C502	23E04635S10	ELY., 10μF/50V
C503	21E09996S03	CER., 100pF
C504	21E09996S03	CER., 100pF
C505	21E09996S03	CER., 100pF
C506	21E09996S03	CER., 100pF
C507	08E04735S11	MYL., 2200pF
C508	08E04735S11	MYL., 2200pF
C509	21E04622S10	CER., 10pF
C510	21E04622S10	CER., 10pF
C511	23E04636S09	ELY., 100μF/25V
C512	23E04636S09	ELY., 100μF/25V
C515	08E04654S13	Plastic, 0.33μF
C516	08E04654S13	Plastic, 0.33μF
C517	21E10214S01	CER., 22pF
C518	21E10214S01	CER., 22pF
C519	21E10214S01	CER., 22pF
C520	21E10214S01	CER., 22pF
C521	23E04635S10	ELY., 10μF/50V
C522	23E04635S10	ELY., 10μF/50V

Symbol No.	Part No.	Description
C523	23E04635S10	ELY., 10μF/50V
C524	23E04635S10	ELY., 10μF/50V
C525	21E04622S11	CER., 47pF
C526	21E04622S11	CER., 47pF
C527	08E04654S09	Plastic, 0.1μF
C528	08E04654S09	Plastic, 0.1μF
C529	08E04654S09	Plastic, 0.1μF
C530	08E04654S09	Plastic, 0.1μF
C531	23E04635S07	ELY., 4.7μF/50V
C532	23E04636S07	ELY., 47μF/25V
C533	21E04631S01	CER., 0.01μF
C534	23E04635S04	ELY., 47μF/50V
C535	23E09995S01	ELY., 22μF/63V
☆ C537	23E09995S03	ELY., 6800μF/63V
★ C537	23E09995S04	ELY., 8200μF/63V
☆ C538	23E09995S03	ELY., 6800μF/63V
★ C538	23E09995S04	ELY., 8200μF/63V
C539	23E09995S02	ELY., 47μF/63V
C540	23E09995S02	ELY., 47μF/63V
C541	23E09995S02	ELY., 47μF/63V
C542	23E09995S02	ELY., 47μF/63V

Resistors

R523	06E09483S05	Fuse, 100 ohm 1/4W
R524	06E09483S05	Fuse, 100 ohm 1/4W
R525	06E09483S05	Fuse, 100 ohm 1/4W
R526	06E09483S05	Fuse, 100 ohm 1/4W
R531	06E09483S01	Fuse, 4.7 ohm 1/4W
R532	06E09483S01	Fuse, 4.7 ohm 1/4W
R533	06E09483S01	Fuse, 4.7 ohm 1/4W
R534	06E09483S01	Fuse, 4.7 ohm 1/4W
R535	06E04639S03	M.O., 150 ohm 1W
R536	06E04639S03	M.O., 150 ohm 1W
R537	06E09483S01	Fuse, 4.7 ohm 1/4W
R538	06E09483S01	Fuse, 4.7 ohm 1/4W
R539	06E09483S01	Fuse, 4.7 ohm 1/4W
R540	06E09483S01	Fuse, 4.7 ohm 1/4W
R541	17E04642S02	Cement, 0.22 ohm 5W×2
R542	17E04642S02	Cement, 0.22 ohm 5W×2
R557	06E04639S05	M.O., 4.7 ohm 1W
R558	06E04639S05	M.O., 4.7 ohm 1W
R561	06E04640S01	M.O., 10 ohm 2W
R576	06E04639S09	M.O., 68 ohm 1W
R577	06E04640S01	M.O., 10 ohm 2W
SVR501	18E09264S01	Variable, 1K ohm
SVR502	18E09264S01	Variable, 1K ohm

Notes : ☆ : For A-321 Model Only, ★ : For A-331 Model Only,
Others : Common.

Symbol No.	Part No.	Description
SUB P. C. Board		
IC's		
IC301	51E09990S01	NJM4580L
IC302	51E09990S01	NJM4580L
IC303	51E09990S01	NJM4580L
IC601	51E09993S01	NJM7812FA
or	51T94884F04	MC7812CT
IC602	51E09805S01	NJM78M12FA
or	51E05536S01	MC78M12CT
IC603	51E09991S01	NJM79M12FA
or	51E09992S01	MC79M12CT
Diodes		
D601	48E08024S01	1N5402
D602	48E08024S01	1N5402
D603	48E08024S01	1N5402
D604	48E08024S01	1N5402
D605	48S40477U02	1N4002
or	48E09802S01	1N4002A
D606	48S40477U02	1N4002
or	48E09802S01	1N4002A
D607	48S40477U02	1N4002
or	48E09802S01	1N4002A
D608	48S40477U02	1N4002
or	48E09802S01	1N4002A
D609	48S40477U02	1N4002
or	48E09802S01	1N4002A
Switches / Jack		
SW301	40E10001S01	Push SPUN12 (CD STRAIGHT)
SW302	40E10002S01	Push SPUN12 (MONO)
SW901	40E10003S01	Push SPUN24 (SPEAKERS (A))
SW902	40E10003S01	Push SPUN24 (SPEAKERS (B))
JK901	09E09066S01	Jack (PHONES)
Capacitors		
C301	21E04622S27	CER., 5.6pF
C302	21E04622S27	CER., 5.6pF
C303	23E05501S04	ELY., (B.P) 4.7μF / 50V
C304	23E05501S04	ELY., (B.P) 4.7μF / 50V

Symbol No.	Part No.	Description
C305	23E04635S07	ELY., 4.7μF / 50V
C306	23E04635S07	ELY., 4.7μF / 50V
C307	21E04622S07	CER., 33pF
C308	21E04622S07	CER., 33pF
C309	23E09994S02	ELY., (B.P) 22μF / 25V
C310	23E09994S02	ELY., (B.P) 22μF / 25V
C311	08E04735S09	MYL., 0.022μF
C312	08E04735S09	MYL., 0.022μF
C313	08E04654S10	Plastic, 0.15μF
C314	08E04654S10	Plastic, 0.15μF
C315	21E09996S03	CER., 100pF
C316	21E09996S03	CER., 100pF
C317	23E05501S04	ELY., (B.P) 4.7μF / 50V
C318	23E05501S04	ELY., (B.P) 4.7μF / 50V
C319	21E04622S10	CER., 10pF
C320	21E04622S10	CER., 10pF
C321	23E09994S02	ELY., (B.P) 22μF / 25V
C322	23E09994S02	ELY., (B.P) 22μF / 25V
C323	21E09996S04	CER., 1000pF
C324	21E09996S04	CER., 1000pF
C325	23E04754S04	ELY., 22μF / 16V
C326	23E04754S04	ELY., 22μF / 16V
C327	23E04754S04	ELY., 22μF / 16V
C328	23E04754S04	ELY., 22μF / 16V
C329	23E04754S04	ELY., 22μF / 16V
C330	23E04754S04	ELY., 22μF / 16V
C331	21E09996S02	CER., 330pF
C332	21E09996S02	CER., 330pF
C601	23E04754S03	ELY., 100μF / 16V
C602	23E04754S05	ELY., 47μF / 16V
C603	23E04754S05	ELY., 47μF / 16V
C604	23E04636S05	ELY., 1000μF / 25V
C605	23E04636S05	ELY., 1000μF / 25V
C606	21E09997S01	CER., 0.022μF
C607	21E09997S01	CER., 0.022μF
C608	23E04635S03	ELY., 1μF / 50V
C609	21E04631S02	CER., 0.022μF
C610	21E04631S02	CER., 0.022μF
C611	21E09997S02	CER., 0.047μF
C612	21E09997S01	CER., 0.022μF
C613	21E04631S02	CER., 0.022μF
C614	21E04631S02	CER., 0.022μF
C616	21E04631S01	CER., 0.01μF
C901	21E09996S05	CER., 560pF
C902	21E09996S05	CER., 560pF
C903	21E04631S02	CER., 0.022μF

Symbol No.	Part No.	Description
Resistors		
☆ R602	06E10011S01	M.O., 300 ohm 3W
★ R602	06E10011S02	M.O., 270 ohm 3W
R604	06E09483S04	Fuse, 1 ohm 1/4W
R605	06E09483S04	Fuse, 1 ohm 1/4W
R902	06E04640S04	M.O., 270 ohm 2W
R903	06E04640S04	M.O., 270 ohm 2W
VR302	18E09266S01	Rotary Volume (BALANCE)
VR303	18E09267S01	Rotary Volume (TREBLE)
VR304	18E09267S01	Rotary Volume (BASS)
★ Video P. C. Board		
IC's		
IC801	51T35588W01	LA7952
IC802	51T35588W01	LA7952
Diodes		
D801	48E04616S01	1N4148
D802	48E04616S01	1N4148
D803	48E04616S01	1N4148
D804	48E04616S01	1N4148
Coil		
L801	24E09998S01	100μF
Capacitors		
C801	23E04635S07	ELY., 4.7μF / 50V
C802	23E06052S04	ELY., 470μF / 10V
C803	23E04635S07	ELY., 4.7μF / 50V
C804	23E06052S04	ELY., 470μF / 10V
C805	23E04635S07	ELY., 4.7μF / 50V
C806	23E06052S04	ELY., 470μF / 10V
C807	23E04754S09	ELY., 330μF / 16V
C808	23E06052S04	ELY., 470μF / 10V
C809	23E04754S09	ELY., 330μF / 16V
C810	23E06052S04	ELY., 470μF / 10V
C811	21E09996S04	CER., 1000pF
C812	21E09996S04	CER., 1000pF
C813	23E04754S04	ELY., 22μF / 16V
C814	23E04754S04	ELY., 22μF / 16V
C815	23E04754S08	ELY., 33μF / 16V
C816	23E06052S01	ELY., 1000μF / 10V
Function P. C. Board		
LED's		
LD401	48E10005S01	SLR-34VC3 (RED)
LD402	48E10005S01	SLR-34VC3 (RED)
LD403	48E10006S01	SLR-34DC3 (ORG)
LD404	48E10006S01	SLR-34DC3 (ORG)
LD405	48E10006S01	SLR-34DC3 (ORG)
LD406	48E10005S01	SLR-34VC3 (RED)
LD407	48E10006S01	SLR-34DC3 (ORG)
Switches		
SW401	40E09999S01	Push SPEC 42 (TAPE)
☆ SW402	40E10000S01	Push SPEC 22 (DAT)
★ SW402	40E09999S01	Push SPEC 42 (DAT / VCR)
SW403	40E10000S01	Push SPEC 22 (TUNER)
☆ SW404	40E10000S01	Push SPEC 22 (CD)
★ SW404	40E10000S01	Push SPEC 22 (CD / LD)
☆ SW405	40E10000S01	Push SPEC 22 (AUX-1)
★ SW405	40E10000S01	Push SPEC 22 (AV)
☆ SW406	40E10000S01	Push SPEC 22 (PHONO / AUX-2)
★ SW406	40E10000S01	Push SPEC 22 (PHONO / AUX)
SP Terminal P. C. Board		
Capacitors		
C904	21E09997S03	CER., 0.022μF
C905	21E09997S03	CER., 0.022μF
C906	21E09997S03	CER., 0.022μF
C907	21E09997S03	CER., 0.022μF
C908	21E04631S04	CER., 0.047μF
C909	21E04631S04	CER., 0.047μF

Notes : ☆ : For A-321 Model Only, ★ : For A-331 Model Only,
Others : Common.

Symbol No.	Part No.	Description
	Phase Sensor P. C. Board	
	Neon Lamp	
	NL701	65E10015S01	NE-1M
	Resistors	
	R701	06E04639S10	M.O., 2.4Mohm 1W
	R702	06E04639S10	M.O., 2.4Mohm 1W
	Miscellaneous	
	C616	08E04663S01	CAP., Line 0.01μF
	F601	65E09767S01	Fuse (250V-2A)
☆	JK201	09E09252S01	RCA Jack (PHONO / AUX-2)
★	JK201	09E09252S01	RCA Jack (PHONO / AUX)
☆	JK401	09E09251S01	RCA Jack (AUX-1, CD)
★	JK401	09E09251S01	RCA Jack (AV, CD / LD)
☆	JK402	09E09251S01	RCA Jack (TUNER, DAT IN)
★	JK402	09E09251S01	RCA Jack (TUNER, DAT / VCR IN)
☆	JK403	09E09251S01	RCA Jack (DAT OUT, TAPE IN)
★	JK403	09E09251S01	RCA Jack (DAT / VCR OUT, TAPE IN)
	JK404	09E09989S01	RCA Jack (TAPE OUT, SIGNAL PROCESSOR IN / OUT)
	JK801	09E10028S01	RCA Jack (AV / LV / VCR)
	JK802	09E10029S01	RCA Jack (VCR OUT / TU MONITOR OUT)
	LD601	48E10006S01	LED, SLR-34DC3 (ORG)
	P601	28E04687S01	Plug AC Cord
	Q511	48E10008S01	Transistor, 2SC3787
	or	48T69176F02	Transistor, 2SC3421
	Q512	48E10008S01	Transistor, 2SC3787
	or	48T69176F02	Transistor, 2SC3421
☆	Q517	48E08016S02	Transistor, 2SC4467
★	Q517	48E10010S01	Transistor, 2SC4468
☆	Q518	48E08016S02	Transistor, 2SC4467
★	Q518	48E10010S01	Transistor, 2SC4468
☆	Q519	48E08017S02	Transistor, 2SA1694
★	Q519	48E09825S01	Transistor, 2SA1695
☆	Q520	48E08017S02	Transistor, 2SA1694
★	Q520	48E09825S01	Transistor, 2SA1695

Symbol No.	Part No.	Description
	SP901	09E09255S01	Speaker Terminal (8P)
	SW601	40E04667S01	Push Switch SDDLB1 (POWER)
	SW602	40E10004S01	Voltage Selector Switch SDKGA4 (220V / 240V)
☆	T601	25E10014S01	Power Trans
★	T601	25E10026S01	Power Trans
	PO501	48E09280S01	Posistor, ZPP221A501A
	VR301	18E08098S01	Rotary Volume (VOLUME CONTROL)

Notes : ☆ : For A-321 Model Only, ★ : For A-331 Model Only,
Others : Common.

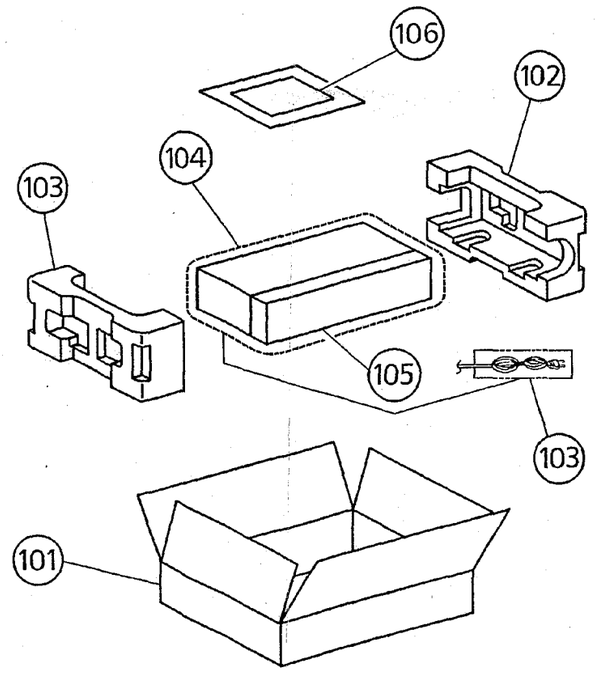
Packing Assembly Parts List

	Syl No.	Part No.	Description
△	101	56E10149S01	Carton, Packing (Individual)
▲	101	56E10150S01	Carton, Packing (Individual)
○	101	56E10016S01	Carton, Packing (Individual)
●	101	56E10031S01	Carton, Packing (Individual)
□	101	56E10017S01	Carton, Packing (Individual)
■	101	56E10032S01	Carton, Packing (Individual)
	102	56E09290S01	Tray, Packing (R)
	103	56E09290S02	Tray, Packing (L)
	104	56E09291S01	High Poly Bag
	105	56E10170S01	Sheet
	106	68P21552W57	Owner's Manual
	107	56E04782S01	Poly, Bag

Symbol No.	Part No.	Description

Notes : △ : For Without Safety Regulations Version (Black Type) [EK] (A-321)
○ : For With Safety Regulations Version (Black Type) [AD] (A-321)
□ : For Without Safety Regulations Version (Champagne Gold Type) [AD] (A-321)
▲ : For Without Safety Regulations Version (Black Type) [EK] (A-331)
● : For With Safety Regulations Version (Black Type) [AD] (A-331)
■ : For Without Safety Regulations Version (Champagne Gold Type) [AD] (A-331)
Others : Common.

Packing Method View



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Cabinet Assembly Parts List

Note : The parts without parts list are not supplied.

Symbol No.		Index	Part No.	Description
△	1	5-C	64E10159S01	Assy., Front Panel
▲	1	5-C	64E10165S01	Assy., Front Panel
○	1	5-C	64E10159S01	Assy., Front Panel
●	1	5-C	64E10165S01	Assy., Front Panel
□	1	5-C	64E10160S01	Assy., Front Panel
■	1	5-C	64E10166S01	Assy., Front Panel
	2		03E04701S01	Screw, Tap Tite (M3×8)
△	3	5-B	36E09303S02	Knob (VOLUME CONTROL)
▲	3	5-B	36E09303S02	Knob (VOLUME CONTROL)
○	3	5-B	36E09303S02	Knob (VOLUME CONTROL)
●	3	5-B	36E09303S02	Knob (VOLUME CONTROL)
□	3	5-B	36E09303S03	Knob (VOLUME CONTROL)
■	3	5-B	36E09303S03	Knob (VOLUME CONTROL)
△	4	5-A	36E09302S01	Knob (Treble / bass)
▲	4	5-A	36E09302S01	Knob (Treble / bass)
○	4	5-A	36E09302S01	Knob (Treble / bass)
●	4	5-A	36E09302S01	Knob (Treble / bass)
□	4	5-A	36E09763S01	Knob (Treble / bass)
■	4	5-A	36E09763S01	Knob (Treble / bass)
△	5	4-A	36E09304S02	Knob (POWER)
▲	5	4-A	36E09304S02	Knob (POWER)
○	5	4-A	36E09304S02	Knob (POWER)
●	5	4-A	36E09304S02	Knob (POWER)
□	5	4-A	36E09304S03	Knob (POWER)
■	5	4-A	36E09304S03	Knob (POWER)
	6	4-A	04E05029S02	Washer (M3)
	7	3-A	43E10024S01	Spacer
	8		03E04775S02	Screw, (M3×6)
	10		03E04701S03	Screw, Tap Tite (M2.6×8)
	11		03E04704S01	Screw, Tap Tite (M3×8)
	12	2-A	09E09253S01	Fuse Clip
	13	2-A	75E09311S01	Cushion
△	14	2-A	15E10019S01	Top Cabinet
▲	14	2-A	15E10019S01	Top Cabinet
○	14	2-A	15E10019S01	Top Cabinet
●	14	2-A	15E10019S01	Top Cabinet
□	14	2-A	15E10020S01	Top Cabinet
■	14	2-A	15E10020S01	Top Cabinet
	15		03E04702S01	Screw, Tap Tite (M4×8)
	16	1-C	03E07999S01	Screw, Tap Tite (M3×8)
	17	1-E	29E10167S01	Canoe Clip
	19	1-F	04E06190S01	Washer, Toothed (M3)

Symbol No.		Index	Part No.	Description
	20		03E04701S04	Screw, Tap Tite (M3×10)
	21	1-G	43E04688S01	Cord Bushing
	22	1-G	22E09489S01	Jumper Pin
	23	2-G	29E09299S01	Ground Terminal
△	24	2-G	15E10145S01	Back Panel
▲	24	2-G	15E10146S01	Back Panel
○	24	2-G	15E10018S01	Back Panel
●	24	2-G	15E10030S01	Back Panel
□	24	2-G	15E10018S01	Back Panel
■	24	2-G	15E10030S01	Back Panel
	25	3-G	05E04709S01	Nylon Rivet
	28		75E08701S01	Foot
	29		75E09820S01	Pad
	30		04E09765S01	Washer, Plan (M4)
	31		03E04701S07	Screw, Tap Tite (M4×14)
	32	5-F	03E04702S05	Screw, Tap Tite (M4×12)
	33	5-E	29E10168S01	Cable Clip
	34	5-E	29E10169S01	Double Clip
	35		03E04704S03	Screw, Tap Tite (M2.6×8)
	37	5-D	26E10022S01	Shield Sheet
△	38	5-D	36E09304S01	Knob (CD straight / mono Speakers A / B)
▲	38	5-D	36E09304S01	Knob (CD straight / mono Speakers A / B)
○	38	5-D	36E09304S01	Knob (CD straight / mono Speakers A / B)
●	38	5-D	36E09304S01	Knob (CD straight / mono Speakers A / B)
□	38	5-D	36E09304S04	Knob (CD straight / mono Speakers A / B)
■	38	5-D	36E09304S04	Knob (CD straight / mono Speakers A / B)
△	40	4-C	36E10161S01	Knob (CD)
▲	40	4-C	36E10161S13	Knob (CD / LD)
○	40	4-C	36E10161S01	Knob (CD)
●	40	4-C	36E10161S13	Knob (CD / LD)
□	40	4-C	36E10161S02	Knob (CD)
■	40	4-C	36E10161S14	Knob (CD / LD)
△	41	4-C	36E10161S03	Knob (PHONO / AUX-2)
▲	41	4-C	36E10161S15	Knob (PHONO / AUX)
○	41	4-C	36E10161S03	Knob (PHONO / AUX-2)
●	41	4-C	36E10161S15	Knob (PHONO / AUX)
□	41	4-C	36E10161S04	Knob (PHONO / AUX-2)

Notes : △ : For Without Safety Regulations Version (Black Type) [EK] (A-321)
○ : For With Safety Regulations Version (Black Type) [AD] (A-321)
□ : For Without Safety Regulations Version (Champagne Gold Type) [AD] (A-321)
▲ : For Without Safety Regulations Version (Black Type) [EK] (A-331)
● : For With Safety Regulations Version (Black Type) [AD] (A-331)
■ : For Without Safety Regulations Version (Champagne Gold Type) [AD] (A-331)
Others : Common.

Symbol No.		Index	Part No.	Description
■	41	4-C	36E10161S16	Knob (PHONO / AUX)
	43		41E10162S01	Leaf Spring
△	44	4-C	36E10161S05	Knob (AUX-1)
▲	44	4-C	36E10161S17	Knob (AV)
○	44	4-C	36E10161S05	Knob (AUX-1)
●	44	4-C	36E10161S17	Knob (AV)
□	44	4-C	36E10161S06	Knob (AUX-1)
■	44	4-C	36E10161S18	Knob (AV)
△	45	4-C	36E10161S07	Knob (TUNER)
▲	45	4-C	36E10161S07	Knob (TUNER)
○	45	4-C	36E10161S07	Knob (TUNER)
●	45	4-C	36E10161S07	Knob (TUNER)
□	45	4-C	36E10161S08	Knob (TUNER)
■	45	4-C	36E10161S08	Knob (TUNER)
△	46	4-B	36E10161S09	Knob (DAT)
▲	46	4-B	36E10161S19	Knob (DAT / VCR)
○	46	4-B	36E10161S09	Knob (DAT)
●	46	4-B	36E10161S19	Knob (DAT / VCR)
□	46	4-B	36E10161S10	Knob (DAT)
■	46	4-B	36E10161S20	Knob (DAT / VCR)
△	47	4-B	36E10161S11	Knob (TAPE)
▲	47	4-B	36E10161S11	Knob (TAPE)
○	47	4-B	36E10161S11	Knob (TAPE)
●	47	4-B	36E10161S11	Knob (TAPE)
□	47	4-B	36E10161S12	Knob (TAPE)
■	47	4-B	36E10161S12	Knob (TAPE)
	49	3-C	26E10023S01	Shield Sheet
	52	2-E	41E10163S01	Leaf Spring
	53	2-E	04E09306S01	Washer, Spring (M3)
	54	2-E	03E04704S05	Screw, Tap Tite (M3×12)
	56	3-D	02E06181S01	Nut, Flange (M4)
	59		03E08004S01	Screw, Tap Tite (M3×6)
	60	5-D	29E10021S01	Lug
	61	4-C	29E09300S01	Lug
	63		04E09766S01	Washer, Spring (M4)

Symbol No.	Index	Part No.	Description

Notes : △ : For Without Safety Regulations Version (Black Type) [EK] (A-321)
○ : For With Safety Regulations Version (Black Type) [AD] (A-321)
□ : For Without Safety Regulations Version (Champagne Gold Type) [AD] (A-321)
▲ : For Without Safety Regulations Version (Black Type) [EK] (A-331)
● : For With Safety Regulations Version (Black Type) [AD] (A-331)
■ : For Without Safety Regulations Version (Champagne Gold Type) [AD] (A-331)
Others : Common.

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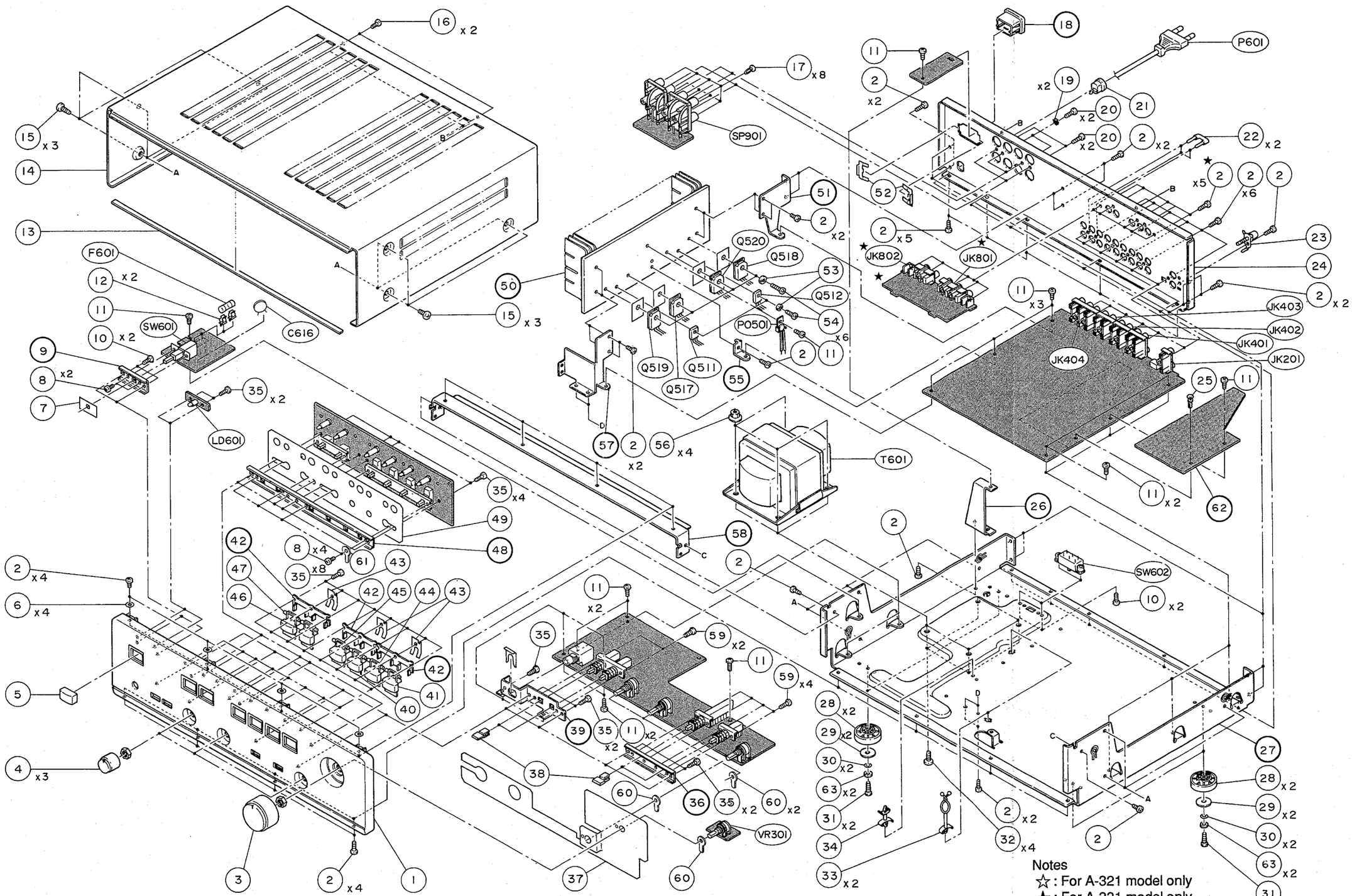
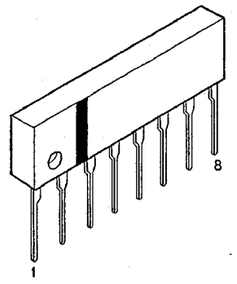
Exploded View (Cabinet)

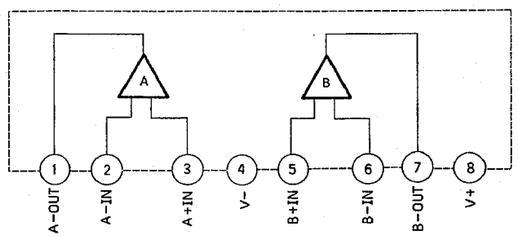


Notes
☆ : For A-321 model only
★ : For A-331 model only
Others : Common.

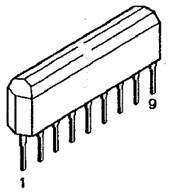
Semi - Conductor Lead Identifications

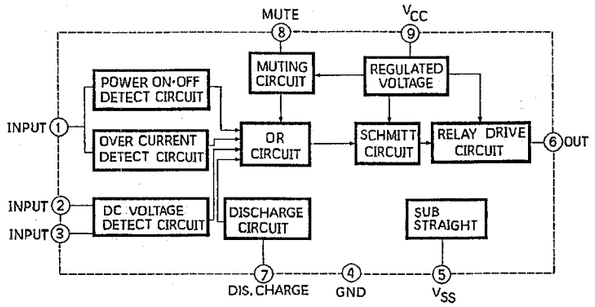
NJM4580L : IC201, 301~303



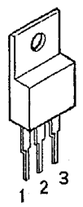


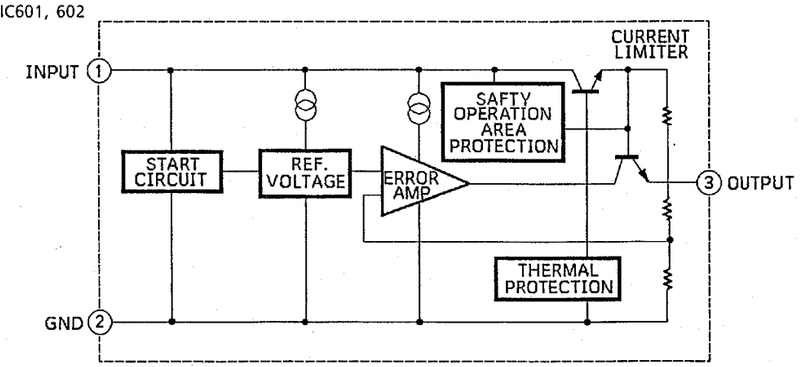
TA7317P : IC501



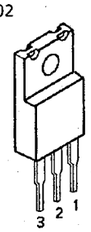


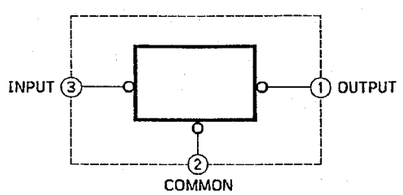
MC7812CT
MC78M12CT : IC601, 602



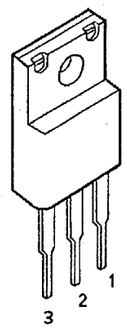


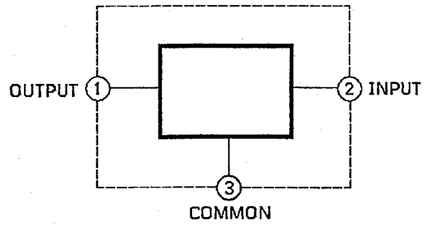
NJM7812FA
NJM78M12FA : IC601, 602



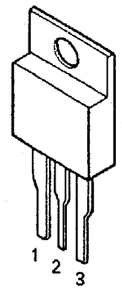


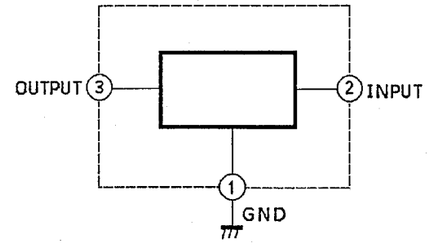
NJM79M12FA : IC603



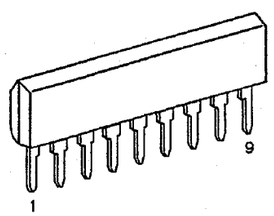


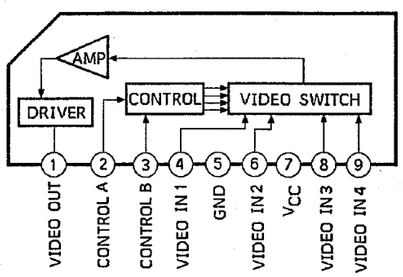
MC79M12CT : IC603





★**LA7952** : IC801, 802





Note : ☆ : For A-321 Model only, ★ : For A-331 Model only, Others : Common.

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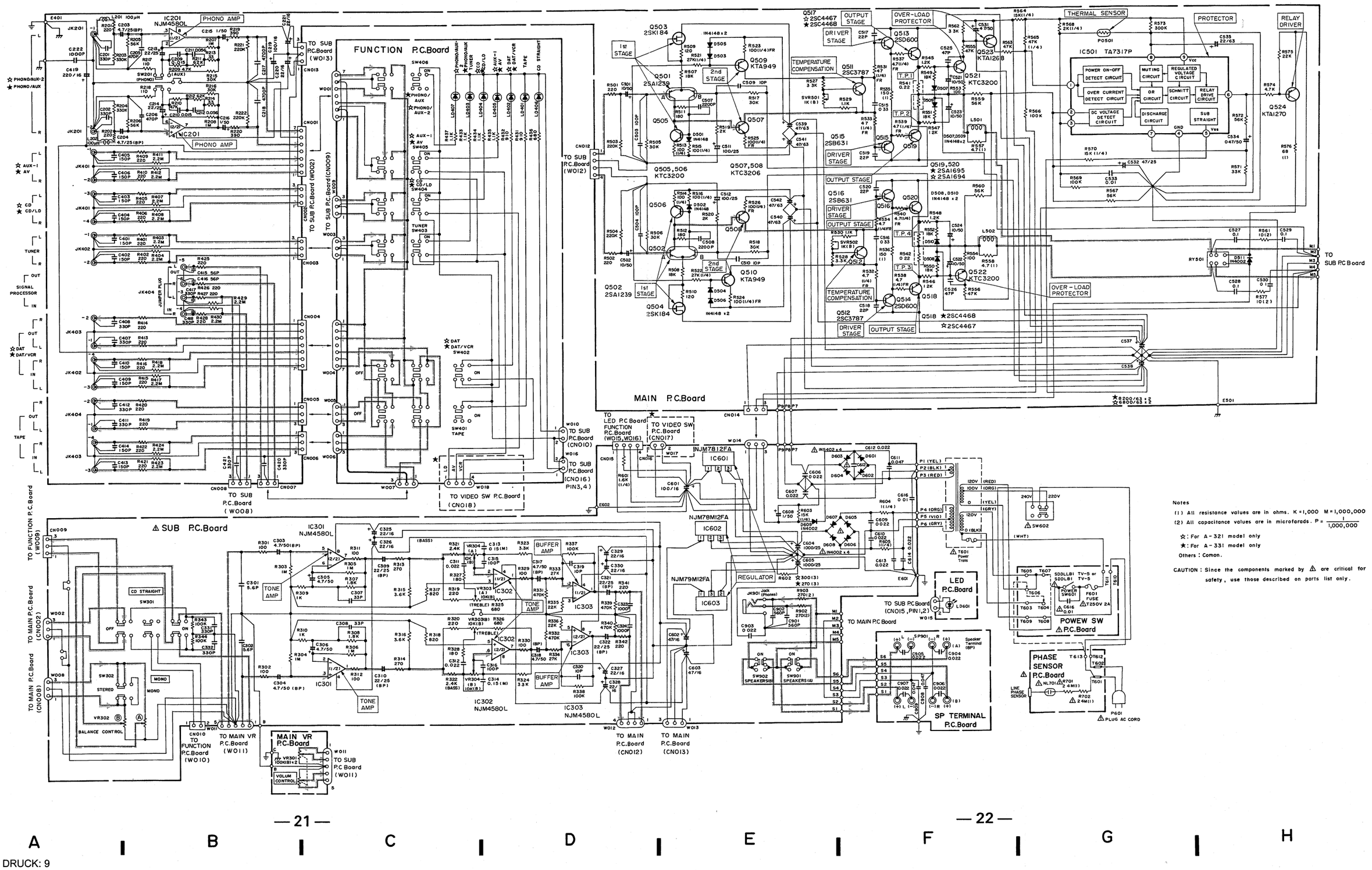
Schematic Diagram

IC'S	IC201	IC301	IC302	IC303	IC602 IC603 IC601	IC501
TRANSISTORS (Q)				Q501 Q503 Q505 Q506 Q502 Q504	Q509 Q507 Q508 Q510	Q511 Q513 Q515 Q516 Q512 Q514 Q517 Q519 Q520 Q518 Q521 Q522 Q523 Q524



Notes

(1) All resistance values are in ohms. K=1,000 M=1,000,000

(2) All capacitance values are in microfarads. P = 1 / 1,000,000

☆: For A-321 model only

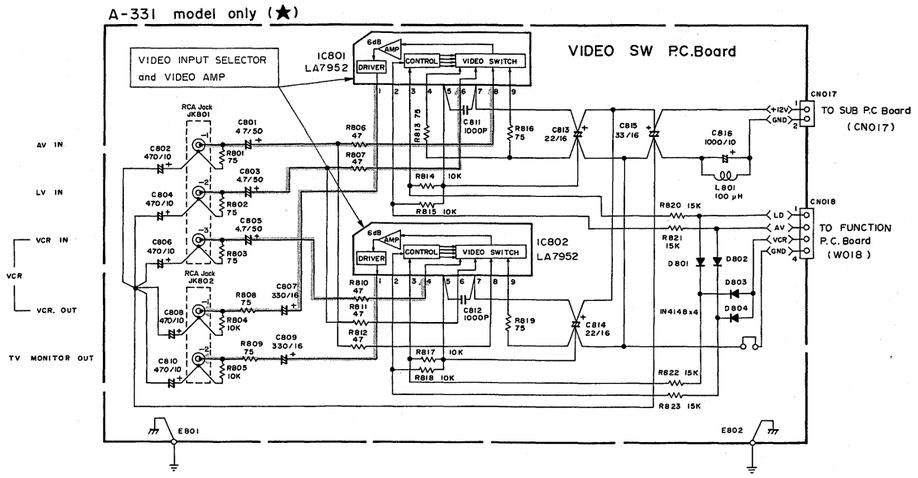
★: For A-331 model only

Others : Comon.

CAUTION : Since the components marked by ⚠ are critical for safety, use those described on parts list only.

IC's	IC801 IC802

A-331 model only (★)



NOTE

1. All resistance values are in ohms K = 1,000 M = 1,000,000
2. All capacitance values are in microfarads P = $\frac{1}{1,000,000}$

TO SUB P.C Board

K = 1,000 M = 1,000,000
grads P = $\frac{1}{1,000,000}$

l by ⚠ are critical for
on parts list only.

	IC201	IC301	IC302	IC303
1	-0.14V	0V	1.2V	-0.009V
2	0.01V	0.15V	2.2V	0.006V
3	0.01V	0.15V	2.2V	0.006V
4	-11.9V	-11.8V	-11.8V	-11.8V
5	0.01V	0.15V	2.2V	0.006V
6	0.01V	0.15V	2.1V	0.006V
7	-0.14V	0V	1.1V	0.009V
8	12.1V	12.1V	12V	12.1V

	IC501
1	0.68V
2	0V
3	0.03V
4	0V
5	0.78V
6	0.78V
7	0V
8	1.27V
9	2.92V

	IC602	IC603
1	12.1V	-11.8V
2	—	—
3	19.4V	-20V

	E	C	B
Q511	1.2V	1.2V	0.5V
Q512	1.2V	1.2V	0.5V

<Measuring Conditions>

1. Power supply voltage : AC220V, 50Hz
2. Measuring meter : Digital Multimeter
3. Measuring point refernce : Between ground
4. Measuring conditions : No Signal Input
   Power Output "OFF"

A-321 model only

	IC601
1	12.02V
2	—
3	19.4V

FET	S	D	G
Q503	36.3V	46.4V	33.9V
Q504	33.4V	46.4V	35.9V

	E	C	B
Q501-A	0.6V	-45.3V	0.043V
Q501-B	0.6V	-45.8V	0.045V
Q502-A	0.6V	-45.3V	0.04V
Q502-B	0.6V	-45.8V	0.038V
Q505	-46.3V	-45.3V	-45.8V
Q506	-46.4V	-45.3V	-45.8V
Q507	-45.7V	-1.2V	-45.3V
Q508	-45.8V	-1.2V	-45.3V
Q509	45.8V	1.2V	45.3V
Q510	45.8V	1.2V	45.3V
Q513	0.6V	46.5V	1.2V

	E	C	B
Q514	0.6V	46.5V	1.2V
Q515	-0.6V	-46.5V	-1.2V
Q516	-0.6V	-46.5V	-1.2V
Q517	0.007V	46.4V	0.6V
Q518	0.009V	46.4V	0.6V
Q519	-0.008V	-46.4V	-0.6V
Q520	-0.06V	-46.4V	-0.6V
Q521	0.003V	46.2V	0.006V
Q522	0.006V	46.2V	0.009V
Q523	46.4V	-0.7V	46.4V
Q524	12V	11.9V	11.9V

A-331 model only

	IC801	IC802
1	3.6V	3.5V
2	0.06V	0.05V
3	0.05V	0.05V
4	0.78V	3.1V
5	0.03V	0.02V
6	3.1V	3.1V
7	11.96V	11.96V
8	3.1V	3.1V
9	0.78V	0.78V

	IC601
1	12.04V
2	—
3	19.4V

	E	C	B
Q501-A	0.6V	-48.5V	0.034V
Q501-B	0.6V	-49V	0.032V
Q502-A	0.6V	-48.5V	0.031V
Q502-B	0.6V	-49V	0.034V
Q505	-49.6V	-48.5V	-49V
Q506	-49.6V	-48.5V	-49V
Q507	-48.9V	-1.2V	-48.5V
Q508	-49V	-1.2V	-48.5V
Q509	49V	1.2V	48.5V
Q510	49V	1.2V	48.5V
Q513	0.6V	49.6V	1.1V

FET	S	D	G
Q503	32.6V	49.6V	33.7V
Q504	31.4V	49.6V	31.8V

	E	C	B
Q514	0.6V	49.6V	1.1V
Q515	-0.6V	-49.6V	-1.1V
Q516	-0.6V	-49.6V	-1.1V
Q517	0.003V	49.6V	0.6V
Q518	0.007V	49.6V	0.6V
Q519	-0.006V	-49.6V	-0.6V
Q520	-0.06V	-49.6V	-0.6V
Q521	-0.002V	49.4V	0.002V
Q522	0.003V	49.4V	0.003V
Q523	46.6V	-0.6V	49.6V
Q524	12V	11.9V	11.3V